PATIENTS PERCEPTION DURING RECUPERATION PERIOD AFTER ORTHOGNATHIC SURGERY

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In partial fulfillment for the degree of
MASTER OF DENTAL SURGERY

BRANCH III
ORAL AND MAXILLOFACIAL SURGERY
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CERTIFICATE

This is to certify that this dissertation titled **"PATIENTS PERCEPTION DURING RECUPERATION PERIOD AFTER ORTHOGNATHIC SURGERY "** is a bonafide record of work done by **Dr. ANUPAM PANDEY** under our guidance and to our satisfaction during his postgraduate study period **2008-2011.**

This Dissertation is submitted to THE TAMILNADU Dr. M.G.R. MEDICAL UNIVERSITY**, in partial fulfillment for the award of the Degree of** MASTER OF DENTAL SURGERY– ORAL AND MAXILLOFACIAL SURGERY, **BRANCH III. It has not been submitted (partial or full) for the award of any other degree or diploma.**

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INTRODUCTION

The shape of the face depends on the architectural framework of the facial skeleton. Dentofacial deformities are described as deformities that affect primarily the jaws and dentition. They may be limited to one jaw or may extend to multiple craniofacial structures.[5,32] Dentofacial deformities affect approximately 20% of the population who present with various degrees of functional and aesthetic compromise. Orthognathic surgery seeks to correct maxillofacial deformities that are often associated with significant functional, psychological impairment & aesthetic imbalance.

Orthognathic surgery is also called cosmetic surgery and the surgeon envisages changing the face of a person from distortion to proportion. Through orthognathic surgery the surgeon could reposition the bones of the face and the jaw to a more aesthetically acceptable position and helps the patient to achieve psychosocial benefits, including: improved self confidence, body and facial image and social adjustment.[10 12,35]

Orthognathic surgery is receiving growing acceptance as a means of correcting dentofacial deformities, and, as a result, there is increasing interest in emotional and behavioural factors that influence adjustment to this form of treatment. Orthognathic surgery is unusual in that it involves not only the anticipation of pain and postoperative discomfort and the expectation of improved function, but it also involves the expectation of cosmetic enhancement. Juggins et al[20] stated that significant differences were found

between patients and clinicians in perceived need for treatment based on facial appearance (orthodontists compared with patients, (P= .023), surgeons compared with patients,(P =.001). In addition, maxillofacial surgeons rated a significantly greater overall need for treatment than patients (P = .027), and they rated treatment need based on facial appearance (P = .005) and function (P <.001) significantly higher than orthodontists Clinicians rated greater need for orthognathic treatment based on facial appearance than did patients. Surgeons also rated greater overall need for treatment than patients. In addition, surgeons rated treatment need based on facial appearance and function significantly higher than orthodontists, but large variations existed in both clinician groups.

There is a growing interest in how orthognathic surgery affects patients life and some studies have suggested significant improvement in quality of life (QOL) and psycho logic dimensions after orthognathic surgery. It is important to establish and compare the impact of various dental and dentofacial conditions on patients QOL so as to determine and prioritize treatment need, especially where public healthcare resources are limited. With the paradigm shift to patient-centered healthcare services, increasing attention is being paid not only to clinicians assessment of treatment outcome, but also patients own perception of changes to their QOL to inform evidence based practice.

The perception of aesthetic morphology, however, differs significantly between dentists and lay persons, and it is important that a patient requiring orthognathic surgery have a thorough understanding of the proposed treatment and predicted results. Bell et al[2],reported that no significant differences emerged between the two professional groups' ratings of surgical or nonsurgical patients. But lay persons were significantly more likely than professionals to assign ratings in the normal range .

It is also essential for the oral and maxillofacial surgeon to fully appreciate the patient's motivations and expectations, as well as the social pressures encountered, since it has been shown that dissatisfaction with aesthetic surgery can be related to the attitude and response of the family, close friends, and even casual contacts. The motivations of orthognathic surgery candidates to seek treatment have been studied quite extensively during the short history. Motives include aesthetic improvement, better functioning of the masticatory organs, pain relief and recommendations from others. Desire for aesthetic improvement, however, has been expressed as the major reason for seeking orthognathic surgery in several studies. [32, 20]

Unlike orthodontic treatment alone, which produces gradual changes in facial features, orthognathic surgery results in sudden, often dramatic modifications. The patient unconsciously adapts to the physiognomic changes during orthodontic treatment and slowly integrates these changes into his/her self-concept. Orthognathic surgery, however, requires a rapid integration of

one's new facial features into the self-concept, thereby placing immediate demands on the patient's adaptation skills.

In the popular Psycho cybernetics, *Maxwell Malt* wrote: **"When you change a man's face you almost invariably change his future. Change his physical image and nearly always you change the man, his personality, his behaviour-and sometimes even his basic talents and abilities.**

Patient perception and satisfaction regarding the outcome of orthognathic surgery is influenced by pre-surgery expectations and psychological well-being. Postoperative dissatisfaction, negative mood and anxiety are more likely to be expressed by patients who have encountered an unexpected event. Recent findings indicate that preoperative psychological distress has a negative impact on postoperative outcome as well as on patient perception regarding oral health before and after surgery. Dissatisfaction with the surgical outcome may lead to psychological disturbance and displeasure, which may be expressed through verbal complaints. On the other hand, satisfaction with orthognathic surgery results in both improvement and psychosocial adjustment. This procedure has resulted in higher subjective estimations of function, appearance, health and interpersonal relations than among untreated control groups .[13, 21, 31]

Most orthognathic surgical procedures involve functional & often marked aesthetic changes which are beneficial to patient, both physically and psychologically. Much behavioural research has been conducted on general

surgery patients and on strictly cosmetic surgery patients. However, comparatively little has been conducted on orthognathic surgery patients, and much of what has been reported has involved the use of specially constructed questionnaires that lack normative data, or the retrospective collection of data under non-standardized conditions.

The objective of our study is to investigate the changes in patient perception and satisfaction during recuperation period after orthognathic surgery.

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AIMS & OBJECTIVES

1) To assess the motivation of a group of patients undergoing orthognathic surgery
2) To assess degree of satisfaction after surgery
3) To assess the outcome of surgery & its effect on quality of life and aesthetics
4) To assess psychological satisfaction post operatively
5) To assess dental health & function of masticatory complex after orthognathic surgery
6) To determine the period of treatment that was more uncomfortable
7) To compare above aspect between age, group & sex
8) To identify any factor that could be the predictor for dissatisfaction

The purpose of this study

The result of this study will be beneficial for orthodontists and surgeons in evaluating the success and effectiveness of treatment based on patient's evaluation. The data will provide meaningful guidelines for developing good patient perception and satisfaction after orthognathic surgery

REVIEW OF LITERATURE

Kiyak HA et al [23](1979) Studied the psychologic characteristics of patients undergoing orthognathic surgery for the postsurgical outcome of neuroticism, locus of control, and expectations. The findings suggest a generally intact ego and accurate self-concept among orthognathic surgery patients.Expectations of pain and parasthesia were the best predictors of postsurgical outcomes, while neuroticism and locus of control scores predicted some outcomes in the early postoperative stages. The importance of the result is indicative of preparing orthognathic patients before surgery against unrealistic expectations and of counselling certain patients during the early postoperative period.

Kiyak HA et al[24] **(1982)** conducted a study on the psychological impact of Orthognathic surgery: to determine the impact of surgical orthodontics on patients personality and perceptions of oral function. The patients were examined with a follow up of 9 months. Patients completed five questionnaires during the course of treatment, from 1 month before to 9 months after surgery. Orthodontic appliances were still being worn by most of the patients at the month assessment. Satisfaction with surgery, self-esteem, and body image were high throughout the postsurgical stage. Satisfaction peaked at 4 months but declined at 9 months post surgery, as did self- esteem and facial body image. Most of this decline was attributable to patients still undergoing orthodontic treatment, but those with continuing problems of pain,

paresthesia, and oral dysfunction were not more likely to report psychological dissatisfaction.

Auerbach SM et al[22] (1984) evaluated the psychological behaviour of some orthognathic surgery patients before and after surgery. Results of preoperative surgery showed the group to be well adjusted, and there were no major changes in psychological functioning. To motivate the patients for surgery included both functional and esthetic goals, and the majority of them were satisfied with the results of surgery. The patient's perception of the surgeon was significantly related to pre- and postoperative adjustment. Two of the measures used, the Health Opinion Survey and the Impact Message Inventory, have potential of screening to identify patients who may develop problems in psychological adjustment to orthognathic surgery.

Flanary CM, et al[12] (1985) conducted a study on 90 orthognathic patient to investigate their presurgical concerns and motivations, their preoperative preparation for surgery, and their perceptions of the postsurgical outcome. Statistical data analyses were performed by means of frequency distributions, chi-square, Spearman, and Fisher exact probability tests. The results were presented as thirteen tentative conclusions categorized into three broad areas: motivations and concerns, presurgical preparation, and postsurgical outcome. In the area of motivations and concerns, those with primarily esthetic motivations had less initial reticence toward having orthognathic surgery and less difficulty adjusting to their new appearance

than those with strong functional incentives. Younger patients and patients with strong cosmetic motivations were less concerned about surgical risks. Under the category of presurgical preparation, more females than males desired to speak to a previous orthognathic surgery patient. One of the leading factors in patient dissatisfaction with surgery is the patients experience of postoperative "surprises." In the area of postsurgical outcome, two-jaw operations precipitated more pain complaints than single-arch procedures. With time, however, patients tend to forget the degree of postoperative pain.

Bell R et al [2] (1985) studied the evaluation of patient done by an oral surgeon and an orthodontist as requiring orthognathic surgery, completed questionnaires rating their perceptions of their own profiles. Half of the patients had decided to undergo surgical correction of their jaw deformities, while the other half had decided against surgical treatment. In addition, booklets containing pretreatment photographs of all patients were mailed to oral surgeons, orthodontists and lay persons. These three groups of evaluators rated the patients' profiles, using the same rating scales that the patients had used. Results of this study support the following conclusions: (1) In spite of the fact that surgical treatment may be recommended by dental specialists and indicated by cephalometric measurements, self perceptions of profile are more important in the patient's decision to elect surgical correction; (2) the perception by others that the profiles of patients deciding against surgery are closer to ideal may have some influence on their decision against surgical

correction of their jaw deformities; (3) oral surgeons and orthodontists evaluate facial profiles similarly, but surgeons are more likely to recommend surgical correction; (4) lay persons are more likely to rate an individual's profile as being normal than are dental specialists in orthodontics and oral surgery; (5) in contrast, individuals perceive their own profiles differently than orthodontists, oral surgeons and lay persons, particularly with respect to the mandibular and dentoalveolar dimensions.

Nagamine T etal[34] (1986), assessed the satisfaction of result in the patients who had undergone either the extra oral curved oblique osteotomy or sagittal split osteotomy for correction of skeletal Class III malocclusions. The results shows that most of the patients were satisfied in regard to their chief problems and many of them had improved masticatory function. A favourable change in appearance was noticed by the patients, whereas others noticed no major changes.

Stewart TD et al[45] (1987), stated in his study that possible complication of orthognathic surgery is major depressive episode that requires attention. The etiology for this condition differs, but the suffering associated with the experience of depression in these patients is clear. Through forewarning about this complication and reassuring, some distress can be controlled. Psychiatric referral needs to be consider only if this depressive reaction does not remit following jaw release or if suicidal ideation occurs.

Attention to these negative feelings can reduce the likelihood of poor patient satisfaction despite good surgical result

Hudson JW et al[18] (1989), showed that the effect of orthognathic surgery on the physical appearance of an identical twin may develop psychological and behavioural changes. An elective orthognathic surgery performed on identical twins and the subsequent impact on the twin relationship due to alterations of "self-image phenomenon" may develop. Further collective study in this area is difficult to obtain because of the rarity of occurrence of this type of case.

Lovius BJ et al[30] (1990), studied the psychosocial impact of orthognathic surgery on patient with maxillary mandibular discrepancies. This study was to test validity of patient's opinions and provide a more accurate method than previously done by assessing the specific pshyco- social effects of orthognathic surgery. Questionnaires were used pre-operative and postoperatively to provide data on body satisfaction scale, fear of negative evaluation , social avoidance and distress and general health questionnaire .results indicate an improvement in body image, particularly in evaluation of *facial aesthetic*

Flanary CM et al[13] (1990) evaluated the psychological adjustments and self-concepts of orthognathic surgery patients before surgery and at 1 month, 6 months, 1 year, and 2 years after surgery. The measures ANOVA used for the improvement in the following subscales of personality

disturbances: general maladjustment, psychosis, neurosis, personality disorder, and personality integration. A significantly positive effect was also observed in the following subscales of self-concept: self-esteem, self-satisfaction, self-identity, physical self, family self, social self, and total self-conflict.

Knoff B et al [27](1991), assessed the patients who had under gone orthognathic surgery with the procedures performed includes horizontal mandibular osteotomy, rapid palatal expansions, bilateral sagittal split osteotomy, posterior and anterior maxillary osteotomy, and Le Fort I osteotomy. Some of these patients were subsequently admitted to a hospital for either observation or full inpatient care and the rates of admission varies with length of anaesthesia received for each of the procedures.

Frost V et al[14](1991), explored motivations and problems shared by adult orthognathic surgical patients over the age of 25. Objective findings included demographic information and reasons for seeking surgery. The majority of patients had functional problems as their primary reason for seeking treatment. Most of them were pleased with esthetic changes, and that the functional problem had been improved. For most, the greatest discomfort related to the surgery was the postoperative intensive care unit. The most common side effects of the surgery were the loss of sensation in the lips and chin area and a short period of depression. Women are more enthusiastic about the final results then men and develop more depression then men. First, although women have functional patterns, the majority of them desire for

cosmetic improvement. Having a functional problem seemed to provide the psychological permission necessary to spend the time and money for a cosmetic change. The second point is need for good communication between surgeon and patient. The patients who have positive attitude toward the procedure and are more satisfied with the results were those who were better informed and who thought that they had a good system of communication with the orthodontist, surgeon, and their respective staffs.

Garvill J et al[15] (1992) Studied patients planned for orthognathic surgery who were evaluated by a team of psychologists, preoperatively and during a period of 18 months postoperatively about their opinion concerning the indication for surgery, information about the surgical procedure, the postoperative period and the long-term aesthetic and functional results. The patients were interviewed 5 times: 2 days before surgery, 2 days after surgery and 2, 6 and18 months after surgery. The decision taken for surgery after a long period of time, 4 years on average, and half of the patients were influenced by their family or dentist before making the decision. Some of the reasons mentioned for surgery included functional problems, facial appearance and craniomandibular symptoms, in which the facial appearance problems had negatively influenced their personal as well as their social fife. Women experienced this problem more often than men. The results showed that the overall majority of patients were relieved of their presurgical problems. The aesthetic improvement was better than expected and improvements in facial

features had a beneficial influence on the patients as individuals and also on their social life situation.

Fish LC et al [11](1993) described orthognathic surgery as ever-improving technology to better rehabilitate patients with dentofacial deformities. Hospital stays have been reduced due to improved surgery and anaesthesia. Rigid internal fixation has increased comfort for many patients by eliminating the inconvenience of having the jaws wired together. Most important has been the realization that teamwork between the general dentist and the various specialty disciplines is indispensable for good patient care and the attainment of the very best results.

Finlay PM et al[10] (1995) showed that the group of patients in the West of Scotland are well adjusted psychologically and the majority seek Orthognathic surgery for aesthetic reasons. The degree of satisfaction is high (87%). Dissatisfaction is not related to sex, age or procedure. Patients who were dissatisfied tend to have higher neuroticism scores on the Eysenck Personality Inventory and those patients who had unreal expectations of post surgical pain, numbness and swelling, were likely to express dissatisfaction with the outcome in the early stages. During the initial 3month the amount of dissatisfaction expressed by the patients with the outcome went on to increase their score and later by 12 months became satisfied with the procedure.

Holman AR et al[17] (1995) examined the relationship between interpersonal support and patient satisfaction with orthognathic surgery was

examined in which adult patients were assessed with two questionnaires measuring the level of general social support they perceived during treatment, and the level of perceived support specifically for their decision to undergo orthognathic surgery and the treatment results. Availability of support of close friends and satisfaction with support were found to be related to the patient's decision to undergo surgery was found to be associated with satisfaction in the early postoperative months. Further, reactions of the patient's support group to his or her postoperative appearance was found to be highly related to satisfaction in both the early and late postoperative stages.

Nagler RM et al[33](1996) studied the suprahyoid muscles which change the previous anatomical function and modification of it. These muscles participate in the oral phase of swallowing and cause upward and anterior motions of the larynx, as well as upward motion of the hyoid. The upward movement of the larynx contributes to opening of the pharyngo- esophageal segment.' There is no such muscle malfunction seems to have occurred as the larynx and hyoid movements and the oral swallowing phase were normal.

Cheng LHH et al[5] (1998) studied on the fact that patients seek combined orthodontic and surgical treatment for predominantly aesthetic reasons, with functional concerns being secondary, whether patients were more satisfied with appearance than function after treatment, 165 patients who had orthognathic operations during the 11-year period 1983-94 were sent a questionnaire; 139 responded (84%). It showed a high level of satisfaction for

both appearance (mean score 6.78) and function (mean score 7.24) (Wilcoxon test, P = 0.046). This indicates that orthognathic surgery is not merely done for aesthetic reasons, but is important when combined with orthodontic treatment in correcting severe malocclusions, which appreciably improve the ability to chew.

Panula K et al[37] (2001) studied the pre-, intra-, and postoperative complications of orthognathic surgery and their significance to the patient. The clinical records and radiographs of 655 patients operated on in Vaasa Central Hospital, Finland during a 13-year period between 1983 and 1996 were examined. The total number of operations was 689. The most common complication was a neurosensory deficit in the region innervated by the inferior alveolar nerve; mild in 32% of patients (183 of 574 patients with an osteotomy in the mandible) and disturbing in 3% of patients (18/574). The most serious complication was severe intraoperative bleeding in 1 patient necessitating major blood transfusions and later embolization of the internal maxillary artery. There were no fatal complications. The incidence of other problems was low, and there were very few patient complaints. Despite the great variety of severe complications reported in the literature, their frequency seems to be extremely low, and orthognathic surgery treatment can be considered to be a safe procedure.

Terzoudi TL et al[46] (2003) study was aimed at assessing patients perceptions of problems with physical and psychological functioning, self-

concept, body image, and satisfaction with the surgical outcome based on subjective evaluations after orthognathic surgery. Also the patient's perception of self-concept, body image, and function was compared with the perception of pre-treatment patients and controls with no treatment need. The study proposed that a sample of 92 persons representing a population without treatment need and 39 patients requesting treatment for a malocclusion served as control group .The findings of this study is that improvement in appearance brought about by orthognathic surgery is associated with improvement in psychosocial adjustment. Orthognathic surgery resulted in subjective estimation of function, appearance health, and interpersonal relationships that was higher than that among pre-treatment and no-treatment control groups. The level of body image and self-esteem approximated but did not reach that of a no patient population. If it is subjectively perceived by the patient, they should be offered appropriate treatment to correct the disfigurement and to improve the psychological outcome with reference to the current psychological and social environment.

Phillips C et al[42](2004) study was done regarding psychological well-being and expectations regarding recovery before surgery and perceptions of recovery. One hundred eighty-four patients with a dentofacial disharmony scheduled for orthognathic surgery were randomly assigned to 1 of 2 preparation strategy groups: a standard presurgical consultation with or without a computerized treatment simulation present. Satisfaction were

assessed for 126 patients at 4-6 weeks after surgery. Viewing a treatment simulation before surgery did not affect patients' perceptions of postsurgical discomfort or satisfaction at 4 to 6 weeks after surgery. Patients who overestimated the discomfort or problems they would experience reported significantly lower average level of problems than those who did not overestimate. Patients who were psychologically distressed before surgery reported, on average, significantly more or difficulty with symptoms, social/self-concerns, general health, and overall recovery after surgery. Viewing a treatment simulation before surgery does not, on average, negatively affect perception of symptoms or satisfaction 4 to 6 weeks after surgery. Overall conclusion after study was that the orthognathic surgery patients who are psychologically distressed before surgery tend to report a higher recovery burden overall and, on average, experience more difficulty with symptoms, social/self-concerns, and general health in the first 1 or 2 months after surgery.

Juggins KJ et al [20] (2005) study was based on the necessity of examination and perceived need for treatment by patients and clinicians. This questionnaire-based study was undertaken at The John Radcliffe Hospital, Oxford, United Kingdom. Forty patients were recruited from combined orthodontic-surgical clinics. They were asked to rate their perceived need for treatment based on facial appearance, dental appearance, function, and overall need. Twenty orthodontists and 20 maxillofacial surgeons were asked to rate

perceived need for treatment based on the same parameters, using study models and clinical photographs. Significant differences were found between patients and clinicians in perceived need for treatment based on facial appearance (orthodontists compared with patients, *P* _ .023; surgeons compared with patients, *P* _ .001). In addition, maxillofacial surgeons rated a significantly greater overall need for treatment than patients (*P* _ .027), and they rated treatment need based on facial appearance (*P* _ .005) and function (*P* _ .001) significantly higher than orthodontists. In addition, surgeons rated treatment need based on facial appearance and function significantly higher than orthodontists.

Klages U et al [26] (2006) In this study, 194 young adults aged 18 – 30 years, were interviewed using a pool of 23 items dealing with the psychosocial impact of dental aesthetics. Self- and interviewer-rating of the dental aesthetic appearance of each subject were carried out using the Aesthetic Component of the Index of Orthodontic Treatment Need. Additionally, the Perception of Occlusion Scale and a modification of the Dental Aesthetic Index were applied. Factorial analyses identified four measures within the item pool, namely Dental Self-Confidence, Social Impact, Psychological Impact, and Aesthetic Concern. The factor structure was confirmed in an independent sample of 83 subjects aged 18 – 33 years. The reliabilities of the factor analysis-derived scales were between alpha (a) 0.85 and 0.91. They differed between respondents with varying severity of malocclusion, as assessed by

subject and interviewer ratings. Conclusion of the study suggest that the proposed instrument, termed the 'Psychosocial Impact of Dental Aesthetics Questionnaire' , meets the criteria of factorial stability across samples and criterion-related validity and reliability, and might be a promising tool for further research and clinical application in orthodontics

Phillips C et al[43](2006) study was aimed to characterize sensory recovery during the first 6 months after surgery and to examine whether patients who underwent different surgical procedures tended to choose different sets of words. Patients' selections from a list of 27 words that described their assessment of spontaneous and evoked facial sensations were obtained before surgery and at 1 week, 1 month, 3 months, and 6 months after surgery. Data were obtained from 146 patients, to evaluate the potential of sensory retraining in the rehabilitation of patients who experience impairment in sensory function after nerve injury on the basis of randomized controlled clinical trial. Mantel Haenszel general correlation and row mean score statistics were used to assess the association between time and word choice and to compare the word choice categories of 4 surgical groups: bilateral sagittal split osteotomy (BSSO) only, with or without genioplasty; BSSO _ Le Fort I, with or without genioplasty. The number of words selected to describe the alteration in sensation decreased over time, as did the intrusiveness of the category of words chosen. However, the intrusiveness remained the same or worsened from 1 week to 6 months for 32% of patients.the percentage of

patients who reported altered evoked sensations exceeded the percentage who reported spontaneous sensations on the basis of duration after surgery. For example, at 6 months the altered sensation of 66% of the patients was classified in the paresthesia and dysesthesia categories by the evoked assessment of sensation; whereas, that of only 47% of the patients were classified as such by the spontaneous assessment. The addition of Le Fort I to BSSO did not affect the way patients reported altered sensation on their lower face. Hypoesthesia and paresthesia, but not dysesthesia, were less of a problem on the midface than on the lower face after BSSO_Le Fort I. Patients who had genioplasty more frequently chose descriptors for the lower face that reflected soft tissue trauma and inflammation ("swollen," "tender," and "burning") than patients without genioplasty; however, this difference decreased with time after surgery. The conclusion indicate that patients' selection of words differentiates individuals who experienced only a simple loss in sensation present negative symptoms, those who experienced active sensations that are not normally present present positive symptoms, and those whose active sensations are additionally uncomfortable or painful. It is possible that continued study of the latter group of patients will reveal patterns of word usage which predict poor long-term recovery and disabling sensory disorders.

Pahkala RH et al[36] (2007) this study was based on the subjective treatment outcomes in patients with bilateral sagittal split osteotomy (BSSO) and to find out whether signs and symptoms of temporomandibular disorder

and changes in occlusion are related to patient satisfaction. Eighty-two patients (53 female, 29 male) with a mean age of 32 years treated with BSSO in the Oral and Maxillofacial Department at Kuopio University Hospital in Finland were examined of which 64 had mandibular advancement, and 18 had mandibular setback. Occlusion and signs and symptoms of temporomandibular disorder were registered pre- and postoperatively. At the postoperative examination , the patients were asked to fill out a questionnaire about the influence of treatment on their masticatory function and symptoms of temporomandibular disorder, as well as their satisfaction with the treatment outcome. temporomandibular disorder symptoms were significantly reduced after treatment. Improvements were also reported in facial appearance (82%) and chewing ability (61%); also, facial (56%) and temporomandibular joint (40%) pain disappeared. However, in 12% of the patients, temporomandibular joint problems were worse after treatment.The patients who had improved mastication and self-confidence and those without long term neurosensory deficits have high satisfaction wth the treatment on the basis of multiple logistic regression analysis. Patients with mandibular setback were more pleased with the outcome than those with mandibular advancement. Orthognathic patients generally experience functional and psychosocial benefits after surgical-orthodontic treatment.Also the psychosocial factors should be more emphasized when making the treatment decision and comparing the alternative treatment approaches in addition to functional and morphological reasons.

Sadek H et al[44] (2007) study is based on the fact to identify motives for seeking surgery,the degree of satisfaction with the outcome and its effect on quality of life.It could be done on the basis of answering standardized questionnaire about 120 patients aged 11-33yrs on whom various orthognathic procedure done were selected. Preoperatively, aesthetic reasons were the primary motive for seeking surgery in 95% of patients. Postoperatively, 85% of the patients were positive about the outcome of surgery as well as its effect on their quality of life. Postoperative improvement of facial aesthetics of the patients was associated with improvement of their quality of life in all aspects.

Lee.S et al[28] (2008) study was done to determine changes in quality of life following orthognathic surgery in patients with dentofacial deformity, using generic health, generic oral health, and condition-specific QOL approaches. Thirty-six patients were evaluated at baseline presurgical 6 weeks postoperatively and 6 months postoperatively . Generic health-related QOL was assessed using the 36-item Short Form Health Survey , generic oral health-related QOL was assessed by the 14-item Short Form Oral Health Impact Profile and condition-specific QOL was assessed by the 22-item Orthognathic Quality of Life Questionnaire .It was concluded that there was a significant reduction (deterioration) in summary physical (P _ .01) and mental health scores (P _ .001) at 6 weeks after surgery but no significant change in overall OHIP-14 or OQLQ scores. At 6 months after surgery, SF-36 summary scores returned to baseline levels and significant reduction

(improvements) in OHIP-14 (*P* _ .001) and OQLQ mean scores (*P* _ .001) were observed. Significant changes in QOL occurred following orthognathic surgery.The study is based on that their is a marked but transient deterioration related to general well being was noted in the early postoperative period and significant improvement was documented by 6 months with the help of a comprehensive assessment of QOL using generic health, generic oral health, and condition-specific approaches.

Chew MT et al[6] (2007) It is based on the fact that the outcome of orthognathic surgery was evaluated by cephalometric measurement of post treatment soft-tissue profile and by subjective evaluation of profile aesthetics by laypersons and clinicians. The sample consisted of 30 Chinese patients who had completed combined orthodontic and orthognathic surgical treatment. The post treatment cephalograms of these patients were analyzed with respect to profile convexity, facial height, and lip contours and these were compared to the previously established aesthetic norms. Line drawings of the soft-tissue profile were displayed to a panel comprising six laypersons and six clinicians who scored the aesthetics of each profile using a 7-point scalepatients.In most of the patients,there were not complete normalization of cephalometric soft-tissue variables with orthognathic surgery.It showed that about four of the six soft-tissue cephalometric measurements show significant differences compared to the aesthetic norms. There were good correlations in the aesthetic scores between laypersons and clinicians, even though clinicians tend to rate

the profiles more favourably. Facial convexity and facial height did not significantly influence the subjective scores of both the laypersons and clinicians. Lower lip protrusion was the only cephalometric variable that significantly influenced clinicians' assessment of profile aesthetics (*P* _ .01). Lower lip position is the only cephalometric variable that significantly influenced clinicians' assessment of profile aesthetics.

Narayanan V et al[35] (2008) the study is aimed at patient's self-perception of facial form oral function and psychosocial function before and after orthognathic surgery. Patient included in the study had to go through 22 questions to evaluate the problem in all four areas as mentioned, in which group 1 include , internal consistency of each scale indicates moderate high internal reliability, ranging from 0.71 for general health to 0.88 for psychosocial problem . In group II, except for functional problems, the internal consistency of each scale has moderate to high reliability. The psychological wellbeing of an orthognathic surgery patient is enhanced by careful preoperative counselling regarding the expected surgical treatment objectives, the operative course and expected postoperative seaquelae. Patient undergone orthognathic surgery readily accepted the changes in their postoperative appearance and are satisfied with the results

Turker N et al[47] (2008) the results of orthognathic treatment were assessed based on the patients' subjective appraisal. Patients completed questionnaires before and after the operations, designed to investigate the

preoperative and postoperative psychological impact of the surgery, the perception of problems with physical and psychological functioning, self-image, body image and satisfaction with surgical outcome. The patients' perception of their psychological improvement, faith in the surgical team, physical functioning, self-esteem, social confidence, body image and satisfaction after dentofacial correction were higher than the preoperative levels. The conclusions of the study is that enhancement of facial appearance by orthognathic surgery improves the psychological status of females with growth disturbances of the jaw.

Phillips C et al[39] (2008) Assessment of the patient done for the outcome of quality of life from the reported time to recovery: post surgery sequelae, discomfort/pain, oral function, and daily activities after Orthognathic surgery. No. of patients which were enrolled was given a 20-item health-related quality of life instrument which has to be completed post surgery day for 90 days. The instrument was designed to assess patients' perception of recovery for 4 domains: post surgery sequelae, discomfort/pain, oral function, and daily activities. Discomfort/pain was recorded with a 7-point Likert-type scale; all other items were measured on a 5-point Likert-type scale. Post surgery sequelae, except swelling, resolved within the first week after surgery for over 75% of the subjects. Discomfort/pain and medication usage persisted for 2 to 3 weeks after surgery for most subjects. Return to usual activities, except for recreational activities, which took substantially longer, mirrored the

resolution of discomfort/pain. Problems with oral function took the longest to resolve, approximately 6 to 8 weeks for the majority of them. Comprehensive daily postoperative patient quality of life data provides the Orthognathic surgeon with estimated recovery times in distinct domains as well as preoperative education of patients regarding preoperative and postoperative expectations.

Williams DM et al[48] (2009) motivation for orthodontic treatment and orthognathic surgery is Improvement in aesthetic and two possible underlying causes are objective physical abnormalities, or the patient's personality type. Questionnaires that measure personality traits were given to 30 women who required orthognathic operations, and a control group of 30 other women. Traits measured were: satisfaction with the appearance of the face, head, and body; tendency to compare their appearance with that of others; the extent to which they are aware of their appearance and how they thought they should look; sense of self identity; depression; anxiety; and self-esteem. The only difference between patients and controls was that patients were more dissatisfied with their facial appearance than the others. Orthognathic patients were psychologically normal except that they had more dissatisfaction with their facial appearance and the only difference is likely that the desire for operation was caused by a genuine physical abnormality rather than a perceived exaggerated aesthetic problem and therefore, t any patient who seeks orthognathic treatment because they have a personality that causes them

to dwell on their appearance (which may lead them to hold unrealistic expectations of intervention) are screened out of the process before they begin treatment.

Kim S et al[21] (2009) study was done to obtain information regarding preoperative dissatisfaction of patients who undergo orthognathic surgery for dentofacial deformities. A total of 44 patients who underwent orthognathic surgery between January 1, 2003, and September 30, 2005, were included in this study. All patients completed 21-item questionnaires, which were analyzed using the frequency distribution and the _2 test. The patients lost 6.4% of their body weight after 1-jaw surgery and 6.7% after 2-jaw surgery. The patients returned to their everyday life 4.8 weeks after 1-jaw surgery and 5.2 weeks after 2-jaw surgery. Restoration of sensory function after jaw surgery required almost 10 weeks. Written information about possible sequelae and the recovery period and patients' consent to the surgical procedure may be helpful in proper communication, which may reduce patients' preoperative dissatisfaction.

MATERIAL AND METHODS

Design of study-

A descriptive longitudinal study was performed in patient undergoing orthognathic surgery during recuperation period for assessing patients perception. Patients were given a questionnaire of 20 questions. Patients perception was assessed on immediate postoperative period and 6 months post operatively.

Study population

All patients undergoing orthognathic procedures either bimaxillary or single jaw osteotomy during the year of 2009-10 at the Department of Oral and Maxillofacial Surgery at Ragas Dental College and Hospital, Chennai were included in the study.

Patient selection

Inclusion criteria

The participants were limited to patients who were treated with

1. Orthognathic surgery without orthodontics
2. Presurgical orthodontics and orthognathic surgery
3. Single or bijaw surgery
4. American Society of Anaesthesiologists class I patients
5. Age below 30 years

Exclusion criteria

All patients with cleft, congenital defect, specific syndromes, gross facial asymmetries and facial deformities due to trauma were excluded.

Evaluation method

Data collection

Patient who met inclusion criteria were requested to take part in the study. Those patient who wished to take part were asked to fill questionnaire, reported questionnaire used in this study gathered information on

1. Demographic characteristics which include age, sex, date, type of operation and type of malocclusion.
2. Reasons for seeking treatment .
3. Perception of immediate postsurgical problems or difficulties.
4. Perception of treatment outcome six month post operative.
5. Satisfaction with information for surgery and recovery

Variables and measurement

Reasons for seeking treatment

Patient where requested to indicate reasons for seeking orthognathic surgery from categories of reasons, including to improve function , facial esthetic, smile aesthetic and other reasons.

Perception of immediate postsurgical problem or difficulties

Perception of problems or difficulties within 3rd day of postoperative were assessed in patient who had undergone orthognathic surgery. Perception contains scales including postsurgical symptoms, problems during hospitalization, general health and social and self concern.

Post surgical perception when compared with pre-surgical expectations

Perception of immediate postsurgical difficulty in eating, breathing, speaking, facial swelling, pain and numbness were compared with pre-surgical questionnaire.

Four scale and 15 items of post surgical perception of problems or difficulties

Scale	Items
Post surgical symptoms	Facial pain
	Swelling
	Numbness
	Chewing
	Speaking
Dentofacial appearance	facial appearance
General health	Headache
	Sleeping
	Breathing
	Stomach problem
Social & self concern	Self - confidence
	Being in public
	Interpersonal relation
	Work performance
	Other comments

Perception of treatment benefits

The improvement or declination on items including eating ability, speech. Esthetical, facial aesthetic, self confidence and social interaction were investigated in patient who have under gone orthognathic surgery. Benefit level of each items was measured by score ranging from completely agree (+2)

to completely disagree(-2). Mean score of benefit level of each items was derived from sum total score of each item divided by total number of patients. Maximum mean score of 2.00 indicates large improvement and minimum mean score -2.00 indicates disagreement.

Satisfaction

Satisfaction following orthognathic surgery assessed satisfaction with information for surgery , functional outcome and recovery in patient who have undergone orthognathic surgery. These 3 scales of satisfaction were derived from item present in table . Patient reported there satisfaction with each item by choosing a statement ranging from agreed completely to disagree completely

Scales	Items
Information for surgery & recovery	surgical plan
	Appearance of face after
	Surgery
	Post surgical problem
Functional outcome	Eating ability
	Speech
	Chewing ability
Self and interpersonal outcomes	smile aesthetic
	facial aesthetic
	self confidence
	psychological benefit
	social interaction

Appendix A

QUESTIONNAIRE 1

Date :-

Reg. No :-
Phone no:
Name
Address
Diagnosis

Year Month Day

Date of birth:
Place of birth
Municipality County

Put a tick in the relevant box!

1.

- □ Married
- □ Unmarried
- □ Divorced
- □ Widow/widower

2. Has anyone suggested that you should seek treatment?

- □ No, I have made this decision completely on my own
- □ Yes
- □ Dentist
- □ Doctor
- □ Teacher
- □ Social worker
- □ Job center
- □ Employer
- □ Workmate, relative or friend
- □ Some other person;

Who?……

(If several People are involved, underline the most important one)

3. Have you tried to get treatment before?

 No
 Yes

If yes,
Where?……..

Why was no treatment?

Performed?……

4. Have you previously undergone any surgery for facial problem / appearance
   - Yes

   Where and when ?……
   - No

5. Have you previously had your teeth adjusted?
   - No
   - Yes

   When? …….
   Where? ……..

6. Have you previously had treatment other than an operation and teeth adjustment that was designed to change the position of your jaw?
   - No
   - Yes
   - Permanent bridge
   - Removable dentures
   - Other treatment

   IF you answered “No” to Question 3

7. Why didn’t you try to get treatment before?
   - Didn’t know that treatment was available?
   - Thought or believed that the cost would be too high
   - Afraid of this kind of treatment
   - Couldn’t be away from work – School
   - Some other reason, which?

8. Do any of your siblings, parents or other relatives have the same Jaw problem

    - ☐ No
    - ☐ Yes

      Which one's?.....

9. a) Have you had gastritis?

    - ☐ No
    - ☐ Yes

   If yes, do you think this had any connection with your Jaw problem / facial appearance

    - ☐ Yes
    - ☐ No

   b) Have you had stomach problems?

    - ☐ No
    - ☐ Yes

   If yes, do you think this had any connection with your Jaw problem / facial appearance

    - ☐ Yes
    - ☐ No

   c) Have you had a gastric ulcer?

    - ☐ No
    - ☐ Yes

   If yes, do you think this had any connection with your Jaw problem / facial appearance

    - ☐ Yes
    - ☐ No

   d) Have you had other problems, which you think are associated with your Jaw problem / facial appearance?

    - ☐ No
    - ☐ Yes
    - ☐

   Which?.....

10.Do you think that you think about your appearance more than normal?

- Yes
- No

11.a) How old were you when you started to have problems because of your Jaw problem/ facial appearance ?

I was .....years old.

b) How old were you when you started to think about your Jaw problem/ facial appearance?

I was.....years old.

12. Do you think you would feel more harmonious if your have a surgery to correct your Jaw?

- No
- Yes

13. Do you often think about your Jaw problem/facial appearance?

- No
- Yes

14.Has your Jaw problem affected your choice of occupation?

- No
- Yes

If so, how? .....

15.What is your job?

.....

Do you come in contact with the general public to a large extent?

- Not at all
- Only slightly
- To some extent
- To a large extent
- On a very large scale

16. Do you feel ”different” from other people because of your Jaw position/ facial appearance?

- □ No
- □ Yes

17. Are you seeking treatment here?

- □ To change your appearance?
- □ To be able to chew more effectively?
- □ To be able to speak better?
- □ Because of nose throat problems?
- □ Because of gastrointestinal problems?

(if there are several reasons, please underline the most important one)

18. Do you avoid any of the following places because of your Jaw problem / facial appearance?

- □ Yes
- □ Restaurants
- □ Meetings at organisations
- □ Study circles
- □ Dance halls or other public places
- □ No

19.Has your Jaw problem / facial appearance caused you problems in your contact with the opposite sex?

- □ Yes
- □ No

20. Do you think a change in your Jaw problem / facial appearance? Would affect any of the following situations?

Yes	No	Don’t know	
□	□	□	Job situation
□	□	□	Socialising with other people
□	□	□	Relationship with the opposite sex
□	□	□	Self-confidence
□	□	□	Would you be a “happier person”

PLEASE MAKE SURE YOU HAVE ANSWERED ALL THE QUESTIONS

Please mark the scale to show how severe your problems are.

	No	Mild	Moderate	Severe
1.Chewing problems				
2.Stomach problems				
3.Headaches				
4.Snoring problems				
5.Speech problems				
6.Aesthetic problems				
7.Bullying				
8.Other reasons				

Appendix B

Date:

Reg no

Name :
Post op day

A number of questions and statements now follow. Please put a tick in the relevant box!

---

1. The result of the treatment was what I had anticipated

   - ☐ Agree completely
   - ☐ Agree to some extent
   - ☐ Cannot judge
   - ☐ Disagree to some extent
   - ☐ Disagree completely

2. The treatment was more difficult than I had expected.

   - ☐ Agree completely
   - ☐ Agree to some extent
   - ☐ Cannot judge
   - ☐ Disagree to same extent
   - ☐ Disagree completely

3. Which period during the treatment was most difficult or stressful?

   - ☐ The period in hospital
   - ☐ Adjusting the teeth
   - ☐ The equipment used for adjusting the teeth

4. Prior to the operation, I had received all the information I needed.

   - ☐ Agree completely
   - ☐ Agree to some extent
   - ☐ Cannot judge
   - ☐ Disagree completely

5. What did the people close to you (family, friends) think about the result of the operation?

   - ☐ Worse than before
   - ☐ Slightly worse than before
   - ☐ Could not judge
   - ☐ Better than before
   - ☐ Much better than before

6. Do you think the result of the operation was:

   - ☐ Worse than before
   - ☐ Slightly worse than before
   - ☐ Could not judge
   - ☐ Better than before
   - ☐ Much better than before

7. Is it easier to chew now?

   - ☐ Worse than before
   - ☐ Slightly worse than before
   - ☐ Could not judge
   - ☐ Better than before
   - ☐ Much better than before

8. Do you think that you speak better than you before?

   - ☐ Worse than before
   - ☐ Slightly worse than before
   - ☐ Could not judge
   - ☐ Better than before
   - ☐ Much better than before

9. Prior to the treatment, did you have problems with:

	Yes	No
Throat	☐	☐
Nose	☐	☐
Oral cavity	☐	☐
Gastro-intestinal tract	☐	☐

10. Has there been any change?

- Worse than before
- Slightly worse than before
- Cannot judge
- Better than before
- Much better than before

11.Do you feel more confident when socializing with other people?

- Worse than before
- Slightly worse than before
- Cannot judge
- Better than before
- Much better than before

12. Have you changed your job or your workplace since the treatment was Concluded?

 Yes No

13.If you answered “Yes”, did this have anything to do with the treatment?

Yes No

14.Do you think that the treatment of your mandibular position/bite disorder has affected any of the following factors?

Yes	No	Don’t know	
			Job situation
			Social situation
			Relationship with the opposite sex
			Self-confidence
			I feel happier person

15. Has any other change taken place in your life that is associated with the treatment of your Jaw deformity/ Jaw position

 No Yes

If yes,
what……..

16. Do you think about your appearance?

- Not at all
- A little
- Cannot say
- Quite a lot
- A great deal

17. Do you think less about your appearance today than you did before the treatment?

- Not at all
- A little
- Cannot say
- Quite a lot
- A great deal

18. Do you feel more harmonious than you did before the operation?

- Not at all
- A little
- Cannot say
- Quite a lot
- A great deal

19. Do you think this treatment opportunity is sufficiently well known?

- Not at all
- Slightly
- Cannot say
- Quite well known
- Very well known

20. Why didn't you seek treatment at an earlier stage?

- Didn't know the treatment was available
- Thought or believed that the cost would be too high
- Afraid of this kind of treatment
- Couldn't be away from work-school
- Some other reason, which?

21. Would you like to have had this treatment before?

 No Yes If yes, how many years ago?

In order to be able to evaluate the effect and define the results of the treatment more effectively, I would like you to rate the intensity of the following problems before and after the operation.

AFTER THE OPERATION

	No	Mild	Moderate	Severe
Chewing Problems				
Stomach Problems				
Headache				
Snoring Problems				
Speech Problems				
Problems associated with appearance				
Bullying				
Facial pain				
Swelling				
Numbness				
Nausea or vomiting				

RESULTS

Eighteen patient who met the inclusion criteria were invited and agreed to take part in the study . In eleven patient questionnaires were completed. The response rate was 61.11% .

The respondents includes 4 males (36.36%) and 7 females (63.63%). Age at the time of surgery ranged from 18 to 30 years , all patient in the study were single. Two patients (18.1%) had Bilateral Sagittal split Osteotomy , four patients (36.3%) had Le Fort I osteotomy , five patient (45.5%) had Anterior maxillary osteotomy , one patient (9.09%) had Genioplasty , four patient (36.3%) had Sub apical osteotomy & one patient (9.09%) had posterior maxillary osteotomy. Among the eleven patient five had single jaw surgery and six had bi- jaw surgery. Table & Graph. 1

Reason For Seeking Treatment

Most patients (63.6%) seeks treatment to improve aesthetics . twenty seven percent patients seek the treatment to improve the masticatory function , eighteen percent would like to improve speech . Seventy two percent patients were seeking treatment to improve their self confidence as they were feeling inferior or different from others , forty five percent patients were seeking treatment to avoid psychosocial stigma .

Reason for seeking treatment has significant relation with sex group , female patient were more concerned about aesthetic & psychosocial status

than male patients. Male patients were more or less concerned about aesthetic , function & self confidence. Table & Graph.2

Perception of immediate post surgical aesthetic

Frequency distributions of responses related to immediate post surgical aesthetic reported from eleven patients who has under gone orthognathic surgery with in one year are shown in table:3 during three to four days of post surgery, patient has mixed reaction regarding symptoms after orthognathic surgery. One patient (9.09%) disagreed with the treatment that was anticipated , five patient (45.5%) were not able to judge the treatment outcome , four patient (36.3%) agreed to some extent that treatment out come was what they anticipated & one patient (9.09%) agreed completely. Two patient (18.1%) judge that results of treatment were worse to some extent, five patient (45.5%) were not able to judge result of treatment, four patient (36.3%) agreed to some extent that results of the treatment were better.

Approximately 27.2% informed there was no change , 45.5% patients were not able to judge the changes & 27.2% patient agreed that treatment has changed the aesthetic. Among eleven patient four patients (36.3%) associates judged that treatment outcome was worst than before , four patients relatives cannot judge & 3 patients relative informed treatment outcome better than before. Five patient (45.5%) disagree that they as concerned about there appearance, three patients (27.2%) were not able to judge , four patient (36.3%) agree to some extent that they are concerned about there appearance

The aesthetic perception of the patients in the current study immediately after the surgery suggest an average of 40% patient cannot judge the outcome of treatment, 32.6% patients feel aesthetic have improved. 1.81% patients agree completely that aesthetic have improved, 27.2% patients disagreed with aesthetic outcome. Table & Graph. 3

Perception of immediate post surgical difficulty and stressful period

Perception of problems and difficulty with in three to four days after surgery were assessed in patients who underwent orthognathic surgery with in one year. The perception contains five scales including, facial pain, swelling, numbness, nausea and vomiting . Degree of problem or difficulty of each parameters measured as Mild , Moderate and Severe. If none of problems or difficulty was chosen the score was assigned as zero. The parameter" Treatment more difficult than expected measured on Agree completely, Agree to some extent, Cannot judge, Disagree to some extent, Disagree completely.

Approximately four patients (36.3%) out of eleven patients judged that treatment was very difficult than what they expected, four patients(36.3%) agreed to some extent that treatment was difficult , two patients (18.1%) (9.09%) disagreed completely from what they expected. Three patients complaint of mild facial pain, seven patients complain of moderate facial pain and one patient complaint of severe pain. Two patients reported mild swelling in the immediate post operative period and nine patients reported moderate swelling. Mild post operative numbness was reported by 36.3% patients and

moderate post operative numbness was reported by 63.6% patients. Only one patient reported mild nausea and vomiting.

Among the eleven patients the perception of difficulty and stress immediately after surgery on an average is 22.72% patients had no difficulty, 43.12% complains of mild, 52.25% moderate and 2.27% complains of severe difficulty and stress after orthognathic surgery. Table & Graph. 4,5

Perception of immediate post surgical function

Perception of function with in three to four days after surgery were assessed in patients who underwent orthognathic surgery with in one year. The perception contains five scales including speak better than before, chewing problem, stomach problem, snoring problem, and headache . Degree of problem or difficulty of each parameter was measured as Mild , Moderate and Severe. If none of problem or difficulty were chosen the score was chosen zero(0).

Approximately three patients(27.2%) out of eleven patients has severe level of difficulty in speaking, six patients (54.5%) cannot judge speech related problem and two patients (18.1%) felt better speech. 45.5% patients reported mild and moderate chewing problem and 9.09% had severe chewing problem. Among eleven patients 90.09% had no stomach and snoring problem only one patient 9.09% reported with stomach and snoring problem. No

headache was reported by 81.8% and two patients (18.1%) had moderate headache problem.

On an average perception of immediate post operative function 65.49% had no functional dissatisfaction, 15.92% patients had mild functional impairments, 15.9% moderate and 2.27% had severe functional impairments. Table & Graph. 6, 7

Perception of immediate post surgical psychosocial status

Perception of psychosocial status with in three to four days after surgery were assessed in patients who underwent orthognathic surgery with in one year. The perception contains five scales including feel more harmonious than you did before the operation, you think about your appearance . Degree of psychosocial status of each item measured on a great deal, Quite a lot, A little, Cannot say and Not at all . Perception of feeling more confident when socializing with other people measured as Worse than before, Slightly worse than before, Cannot say, Better than before and Much better than before. Perception of bulling or teasing measured as No, Mild, Moderate and Severe.

Approximately four patients (36.3%) out of eleven patients feel little harmonious than before , two patients(18.1%) had a dual answer and feelquite a lot harmonious and cannot say and three patients feel not at all harmonious. Five patients(54.5%) think about their appearance, three patients(27.2%) think little about there appearance, two patients(18.1%) think a great deal about

there appearance. Four patients(36.3%) slightly worse than before in their confidence, three patients(27.2%) cannot judge about their confidence, one patient(9.09%) felt worst than before and two patients(18.1%) judged better than before in their confidence. Five patients reported that no one teases them, four patients suffer from mild teasing, one patient complained of moderate teasing.

Average perception of immediate psychosocial status of patients underwent orthognathic surgery was 36.3% patients informed that their psychosocial status had worsen, 9.06% patients informed worsen to a great deal, 27.2% patients informed that surgery affected there psychosocial status to a little extent and 15.06% patients cannot say , 9.06% patients agreed surgery has not affected their psychosocial status. Table & Graph. 8, 9

Perception six month post surgical aesthetic

Frequency distributions of responses related to immediate post surgical aesthetic reported from eleven patient who has under gone orthognathic surgery with in one year are shown in table: 11 six month post surgery, patient has mixed reaction regarding symptoms after orthognathic surgery. Four patients(36.3%) agreed to some extent that result of treatment was what they anticipated and seven patient(63.6%) out of eleven patients agreed completely the result of treatment was what was anticipated. Six patient(54.5%) judge result of operation was better than before, two patient(18.1%) agreed completely with the result of treatment and one

patient(9.09%) judge result bad after treatment. Two patient cannot judge changes, five patients agreed that there has been changes in aesthetic and four patient agreed completely about changes in there aesthetic. Six patients close relatives agreed completely about better aesthetic, four patients close relative agree to some extent and one of patient relatives cannot judge. 45.5% patients disagree that they think about there appearance, 27.2% patients cannot judge, 9.09% patient wont think about there appearance and 18.1% patient still think about there appearance.

Average Aesthetic perception of patient in current study six month after orthognathic surgery 38.14% patients agreed that their aesthetic had improved and 34.5% patients agreed completely with the improvement in there aesthetic, 10.91% patients feel aesthetic had worsen to some extent and 1.81% patients feel it had worsen completely. Table & Graph. 10

Perception six month post surgical difficulty and stress

Perception of problems and difficulty six months after surgery were assessed in patient underwent orthognathic surgery with in one year. Among eleven patients four patients agreed and disagreed both that treatment was more difficult than they expected, two patients disagreed about difficult treatment and one patient cannot judge. 81.8% patient don't have any pain and swelling six month post operatively and two patient complained about mild pain and swelling. Mild numbness reported by 27.2% patients six month post

operative and 72.7% patient has no signs of numbness. Mild nausea and vomiting reported only by one patient.

Average perception difficulty and stress of patients six month after surgery was 81.8% patients informed that the did not have any problem, 15.85% had mild problems like pain and numbness. Table & Graph. 11, 12

Perception six month post surgical function

Perception of function six months after surgery were assessed in patient underwent orthognathic surgery with in one year. Out of eleven patients seven patient reported with improvement in there speech after six month of surgery and four patient were not able to judge about there speech. Six patient don't have any chewing problem six month post operative, three patient reported moderate and one patient with mid chewing problem. Stomach problem was not reported by any patients, mild snoring problem reported by one patient and rest all patient don't have any snoring problem, Headache was not reported by any patients.

Average perception of functions six month post operative after orthognathic surgery by patients in the study was 86.35% patient don't have any functional impairment, 9.09% and 6.8% had mild to moderate functional problem. Table & Garaph. 13, 14

Perception six month post surgical psychosocial status

Perception of psychosocial status six months after surgery were assessed in patient underwent orthognathic surgery with in one year. Six patients(54.5%) felt that they were looking more harmonious than before, one patient agreed completely regarding his facial profile and two patients were not able to judge about harmony. Two patients(18.1%) think about there appearance a great deal, four patients(36.3%) think quite a lot about appearance, four patients(36.3%) think little about and one patient (9.09%) cannot say about appearance (table: 16). Out of eleven patients four patients (36.3%) feel more confident in socializing with other people six month post operative, two patients (18.1%) much better than before in socializing, two patient(18.1%) cannot judge and three patients (27.2%) slightly difficult than before in socializing with others. Mild bulling was reported by one patient and rest has no bulling or teasing problem by others. Table &Graph. 15, 16

Average perception of psychosocial status six month post operative after orthognathic surgery by patients in the study was 13.5% patients in the study completely agreed they were feeling more harmonious and confident than before , 45.4% reported treatment was quite a lot beneficial to elevate their self confidence and to look more harmonious and 19.63% patients were not able to comment on treatment outcome.

Perception of over all treatment outcome

In the current study conducted on eleven patients who had undergone orthognathic surgery with in one year.

On Perception of aesthetic outcome majority of patient were satisfied with the aesthetic outcome on long tern scale although 27.24% patient were disagreed and40% were not able to judge immediately after surgery but on a long term scale most f the patients were satisfied with there aesthetic outcome.

Perception of difficulty and stress through out treatment period had changed from immediate to six month after surgery. Immediate post operative 43.12% have mild problem, 52.25% had moderate and2.27% patients had severe problem like the period of hospitalization, socializing with people, swelling, numbness, vomiting but on a long term 81.8% had no difficulty, stress and only15.85% patients had difficulty.

In the term of long-term functional outcome, most of the patients (86.35%) in the study were satisfied with the functional outcome only 9.09% patient had mild and 6.8% had moderate problems. Overall functional outcome was better than the patients had before surgery

Psychologically patients feel more harmonious and well, socially patients found them self more comfortable in comparison with pre treatment, immediate post operative and six months post operative.

Table 1. Demographic characteristics of sample that completed study		
Sex		
Males	4	36.36%
Females	7	63.63%
Age		
15-20	2	18.18%
21-25	6	54.54%
25-30	2	18.18%
Marital status		
Single	11	
Married	0	
Divorced	0	
Types of surgery		
Maxillary osteotomy	6	54.5%
Mandibular osteotomy	5	45.4%
Two-jaw surgery	6	54.5%

Table : 2 Number and Percent of patients who report different reason for seeking Orthognathic Surgery		
To improve	**N = 11**	**Percentage**
Aesthetic	7	63.6%
Function	3	27.2%
Self confidence	8	72.7%
Speech	2	18.1%
Psychosocial	5	45.5%

Table :3 Perception of immediate post surgical aesthetic					
Question	**Disagree Or worse completely**	**Disagree Or worse to some extent**	**Cannot judge**	**Agree or better than before**	**Agree or better completely**
Result of the treatment was what I had anticipated	0%	9.09%	45.5%	36.3%	9.09%
The result of the operation was	0%	18.1%	45.5%	36.3%	0%
Has there been any change	0%	27.2%	45.5%	27.2%	0%
People close to you think about the result of the operation	0%	36.3%	36.3%	27.2%	0%
You think less about your appearance today than you did before the treatment	0%	45.5%	27.2%	36.3%	0%
MEAN		**27.24%**	**40%**	**32.6%**	**1.81%**

Table: 4 Perception of immediate post surgical difficulty and stressful period				
Question	**No**	**Mild**	**Moderate**	**Severe**
Facial pain	0%	27.2%	63.6%	9.09%
Swelling	0%	18.1%	81.8%	0%
Numbness	0%	36.3%	63.6%	0%
Nausea or vomiting	90.9%	9.09%	0%	0%
MEAN	**22.72%**	**43.12%**	**52.25%**	**2.27%**

Table: 5 Perception of immediate post surgical difficulty and stressful period					
Question	**Agree completed**	**Agree to some extent**	**Cannot judge**	**Disagree to some extent**	**Disagree completely**
Treatment was more difficult than I had expected	36.3%	36.3%	0%	18.1%	9.09%

Table : 6 Perception of immediate post surgical function				
Question	**No**	**Mild**	**Moderate**	**Severe**
Chewing Problems	0%	45.5%	45.5%	9.09%
Stomach Problems	90.09%	9.09%	0%	0%
Snoring Problems	90.09%	9.09%	0%	0%
Headache	81.8%	0%	18.1%	0%
MEAN	**65.49%**	**15.92%**	**15.9%**	**2.27%**

Table: 7 Perception of immediate post surgical function			
Questions	**Worse than before**	**Cannot judge**	**Better than before**
You think speak better than you before	27.2%	54.5%	18.1%

Table: 8 Perception of immediate post surgical psychosocial status					
Questions	**A great deal**	**Quite a lot**	**A little**	**Cannot say**	**Not at all**
Feel more harmonious than you did before the operation	0%	18.1%	36.3%	18.1%	27.2%
Feel more confident when socializing with other people	0%	18.1%	27.2%	36.3%	9.09%
MEAN	**0%**	**18.1%**	**31.75%**	**27.2%**	**18.14%**

Table: 9 Perception of immediate post surgical psychosocial status				
Question	**No**	**Mild**	**Moderate**	**Severe**
Bulling or teasing	54.5%	36.3%	0.09%	0%

Table : 10 Perception six months post surgical aesthetic					
Question	**Disagree Or worse completely**	**Disagree Or worse to some extent**	**Cannot judge**	**Agree or better than before**	**Agree or better completely**
Result of the treatment was what I had anticipated	0%	0%	0%	36.3%	63.6%
The result of the operation was	0%	9.09%	18.1%	54.5%	18.1%
Has there been any change	0%	0%	18.1%	45.5%	36.30%
People close to you think about the result of the operation	0%	0%	9.09%	36.3%	54.5%
You think less about your appearance today than you did before the treatment	9.09%	45.5%	27.2%	18.1%	0%
MEAN	**1.81%**	**10.91%**	**14.49%**	**38.14%**	**34.5%**

Table:11 Perception six month post surgical difficulty and stress				
Question	**No**	**Mild**	**Moderate**	**Severe**
Facial pain	81.8%	18.1%	0%	0%
Swelling	81.8%	18.1%	0%	0%
Numbness	72.7%	27.2%	0%	0%
Nausea or vomiting	90.9%	0%	0%	0%
MEAN	**81.8%**	**15.85%**	**0%**	**0%**

Table : 12 Perception six month post surgical difficulty and stress					
Question	**Agree completed**	**Agree to some extent**	**Cannot judge**	**Disagree to some extent**	**Disagree completely**
Treatment was more difficult than I had expected	0%	36.3%	9.09%	18.1%	36.3%

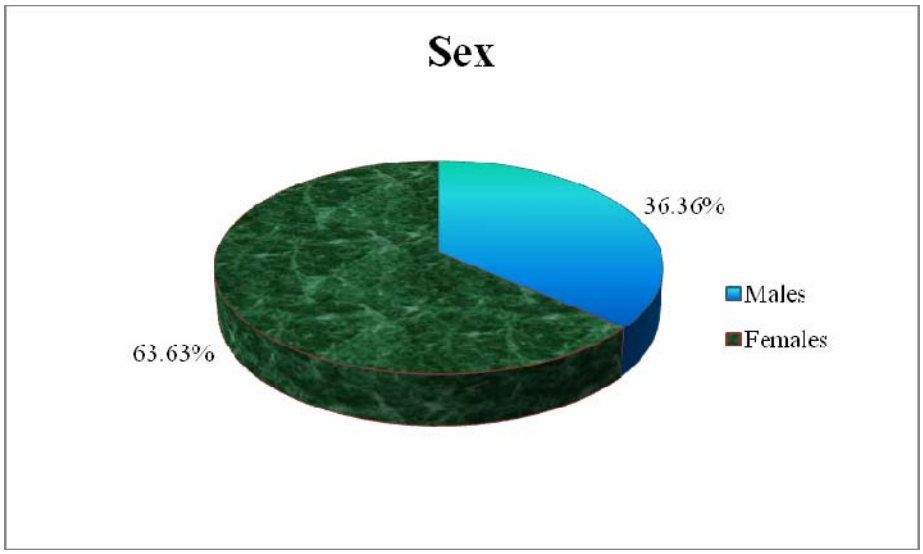
Table: 13 Perception six month post surgical function				
Question	**No**	**Mild**	**Moderate**	**Severe**
Chewing Problems	54.5%	9.09%	27.2%	0%
Stomach problem	100%	0%	0%	0%
Snoring Problems	90.9%	9.09%	0%	0%
Headache	100%	0%	0%	0%
MEAN	**86.35%**	**9.09%**	**6.8%**	**0%**

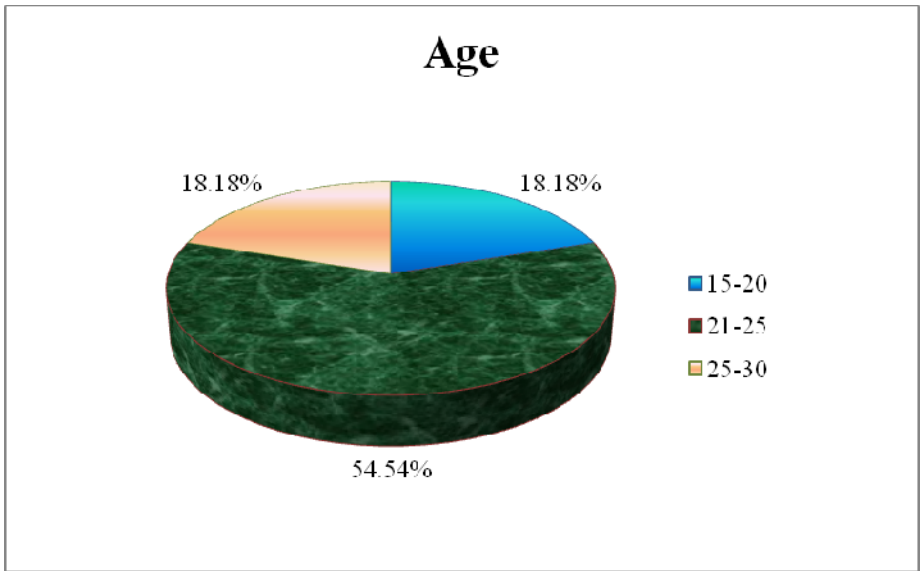
Table: 14 Perception six month post surgical function			
Questions	**Worse than before**	**Cannot judge**	**Better than before**
You think speak better than you before	0%	36.3%	63.6%

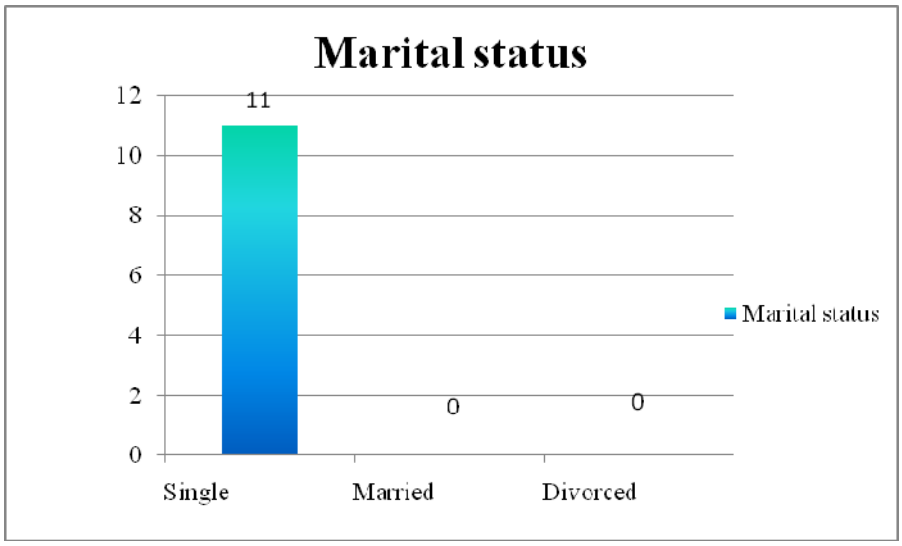
Table: 15 Perception six month post surgical psychosocial status					
Questions	**A great deal**	**Quite a lot**	**A little**	**Cannot say**	**Not at all**
Feel more harmonious than you did before the operation	9.09%	54.5%	18.1%	18.1%	0%
Feel more confident when socializing with other people	18.1%	36.3%	18.1%	27.2%	0%
MEAN	**13.5%**	**45.4%**	**18.1%**	**19.63%**	**0%**

Table: 16 Perception six month post surgical psychosocial status				
Question	**No**	**Mild**	**Moderate**	**Severe**
Bulling or teasing	90.9%	9.09%	0%	0%

Graph 1. Demographic characteristics of sample that completed study






Marital status
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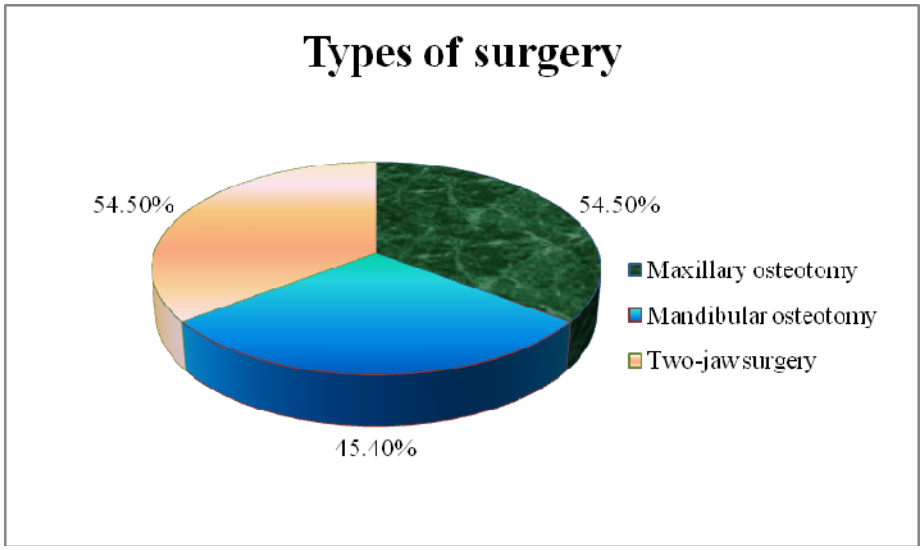
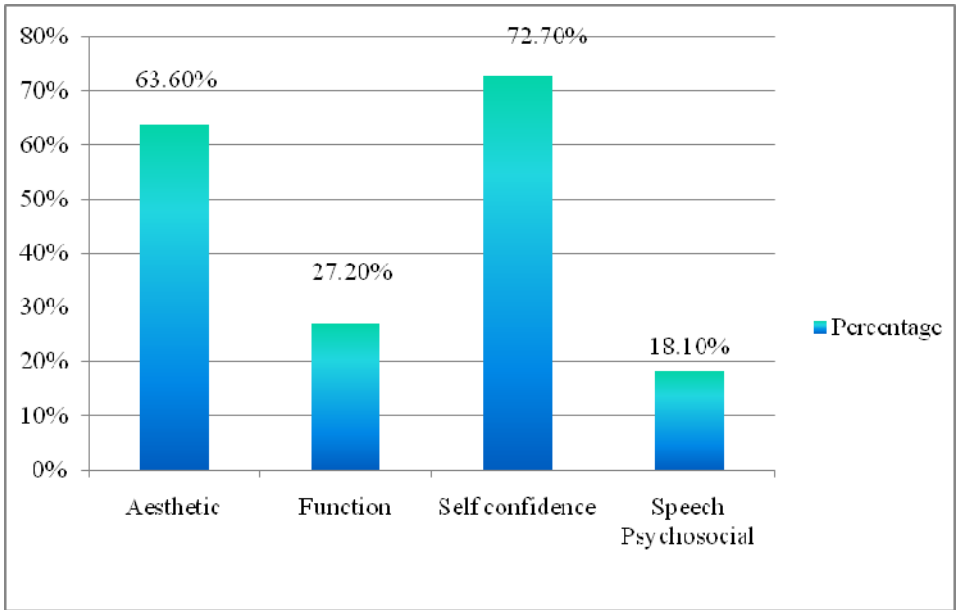
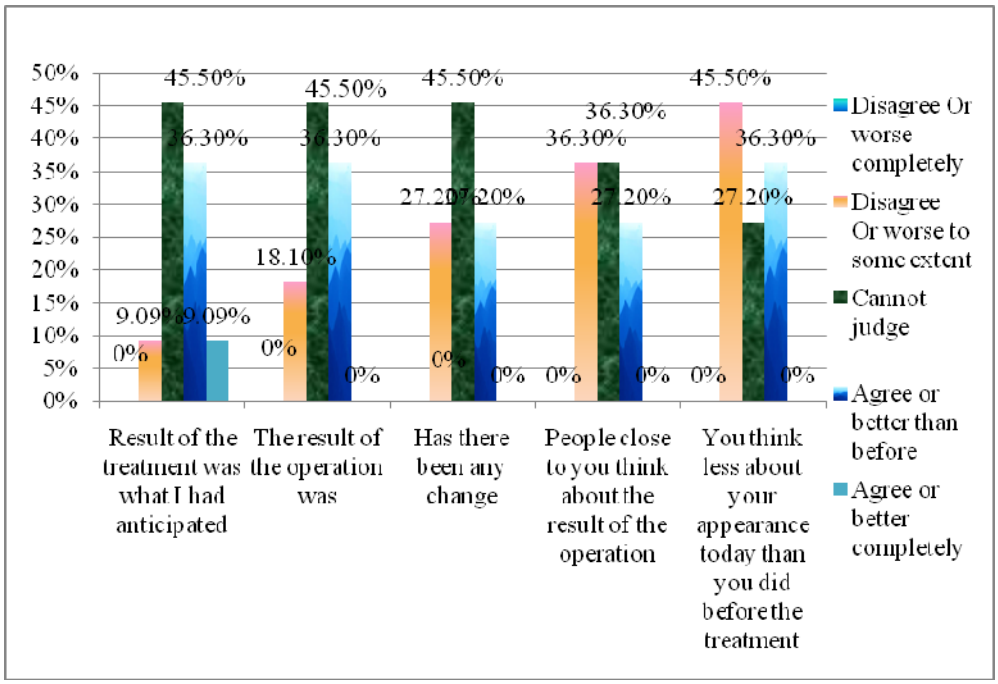
8
6
4
2
0
11
0
0
Single
Married
Divorced
Marital status


Types of surgery
54.50%
54.50%
45.40%
Maxillary osteotomy
Mandibular osteotomy
Two-jaw surgery

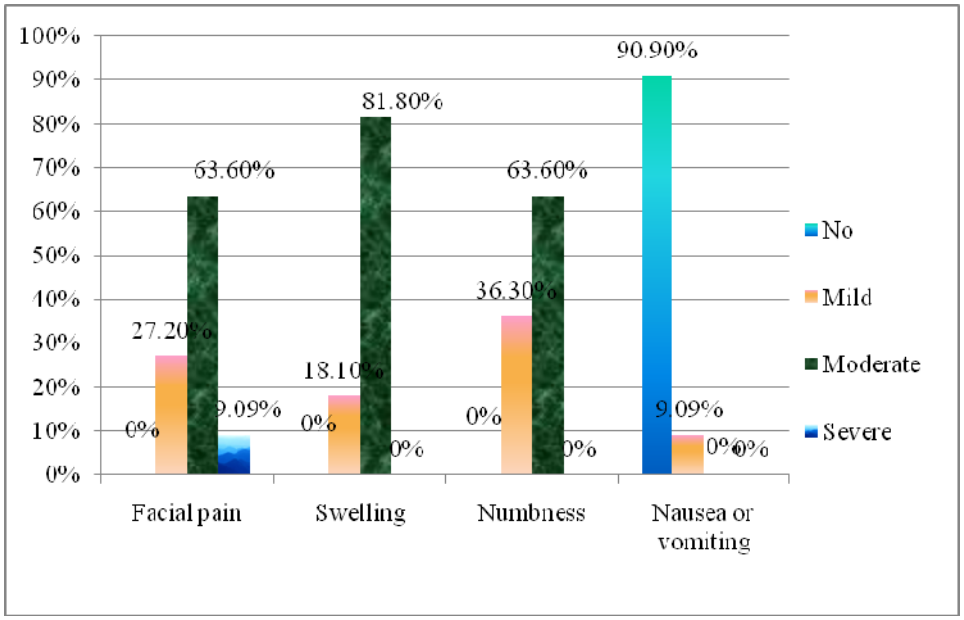
Graph : 2 Number and Percent of patients who report different reason for seeking Orthognathic Surgery



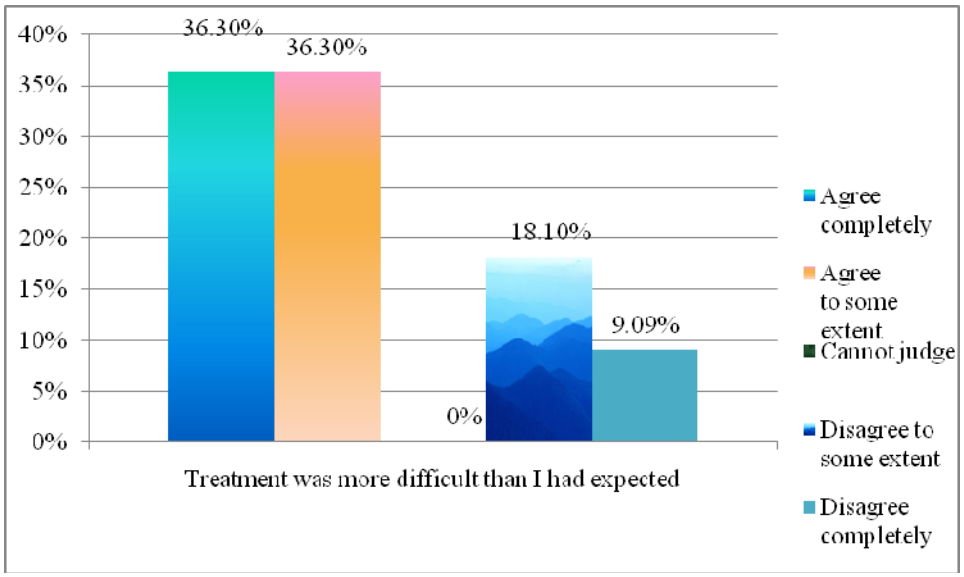
Graph :3 Perception of immediate post surgical aesthetic



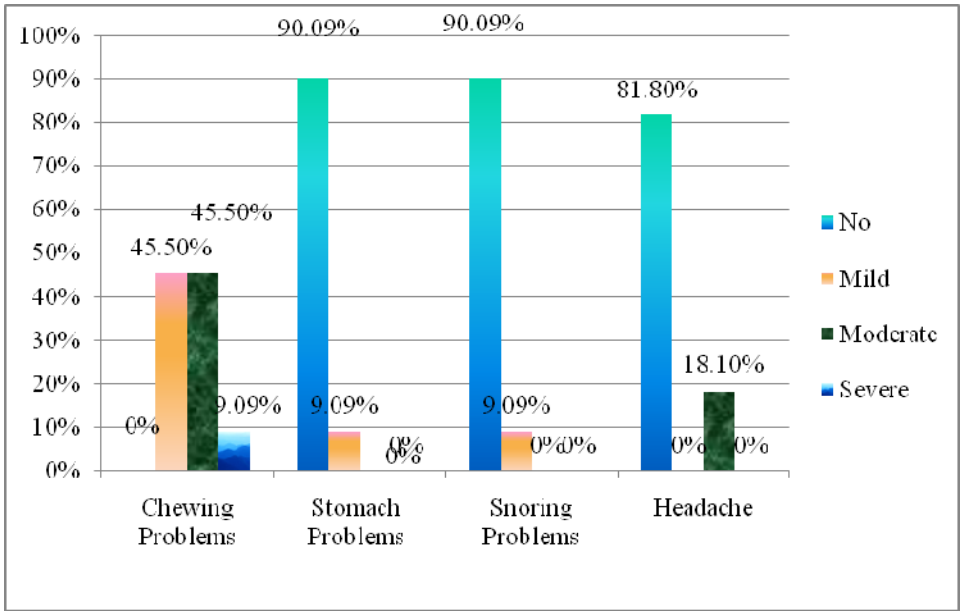
Graph: 4 Perception of immediate post surgical difficulty and stressful Period



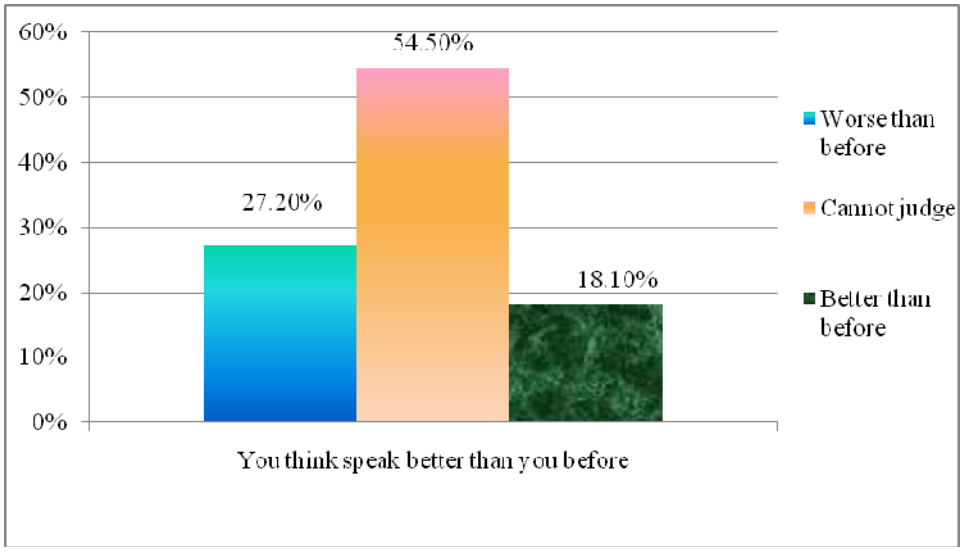
Graph: 5 Perception of immediate post surgical difficulty and stressful period



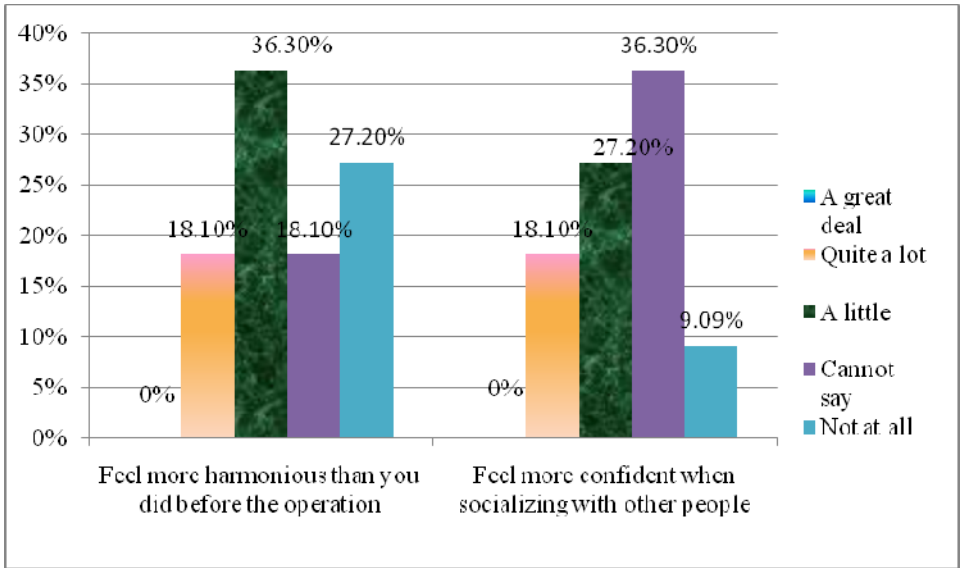
Graph : 6 Perception of immediate post surgical function



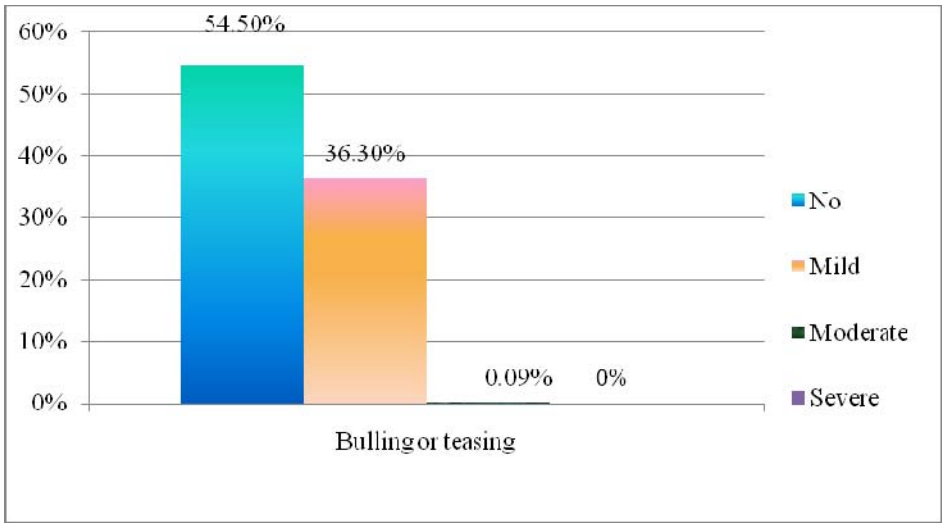
Graph: 7 Perception of immediate post surgical function



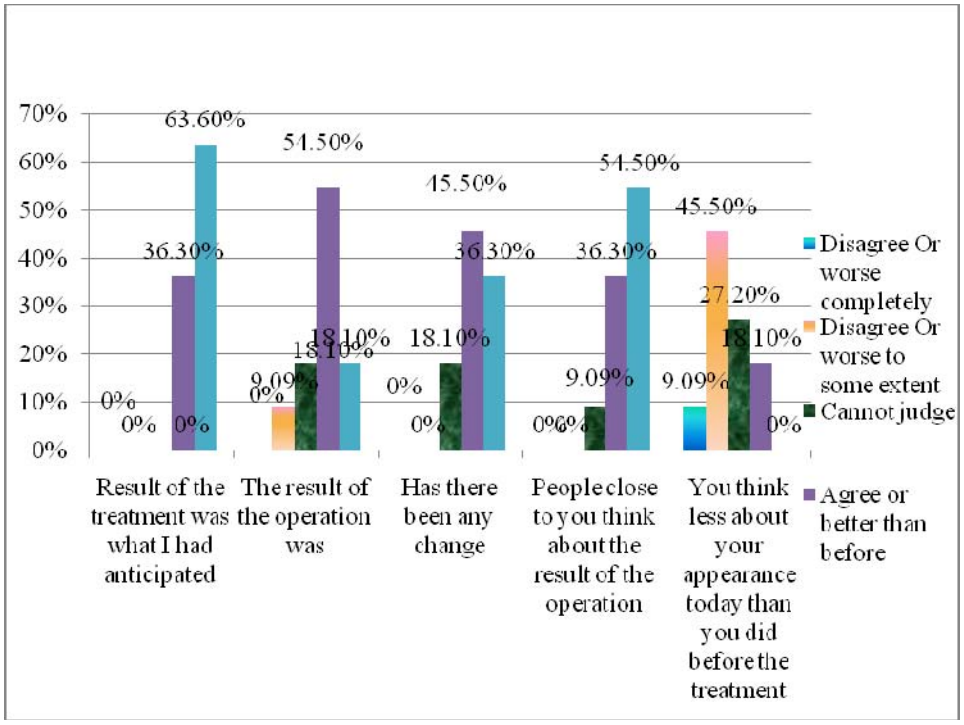
Graph: 8 Perception of immediate post surgical psychosocial status



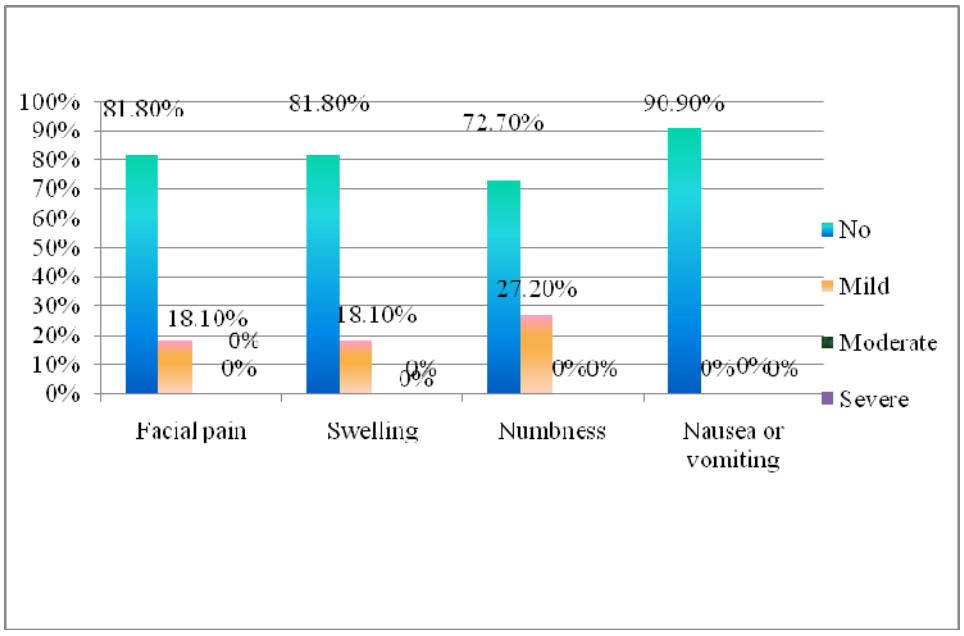
Graph: 9 Perception of immediate post surgical psychosocial status



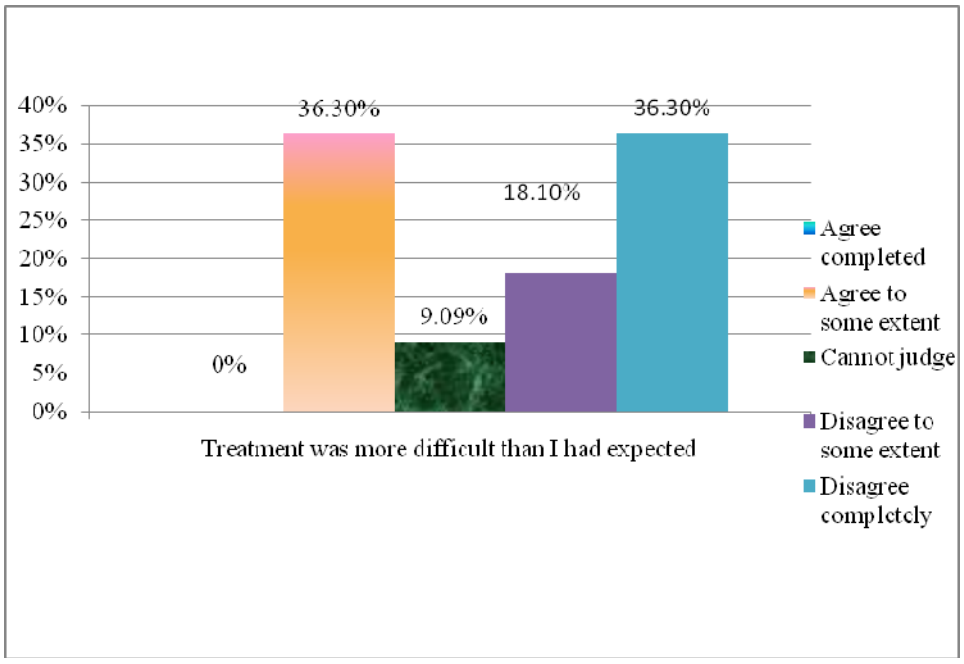
Graph : 10 Perception six months post surgical aesthetic



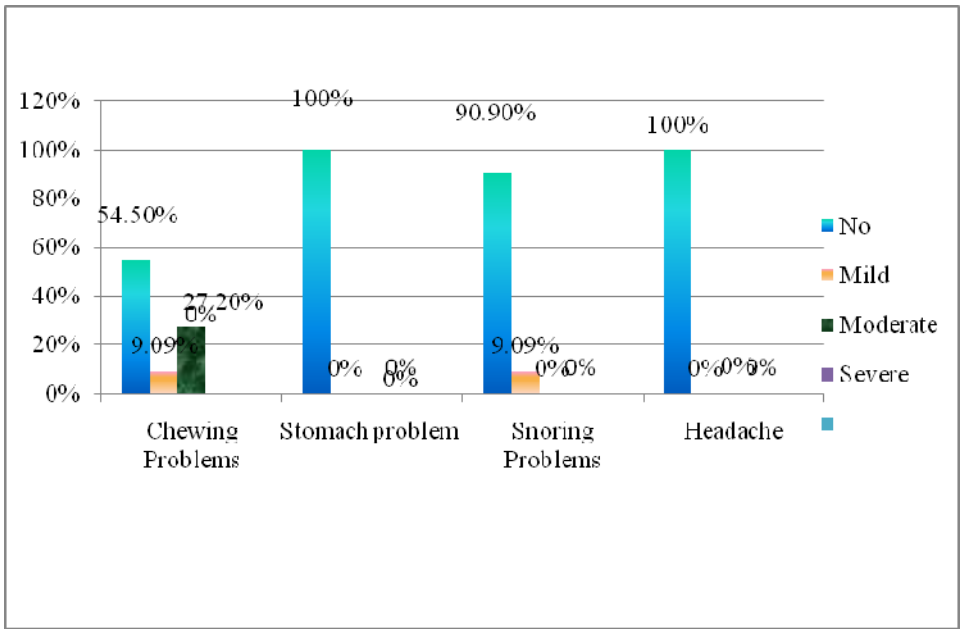
Graph:11 Perception six month post surgical difficulty and stress



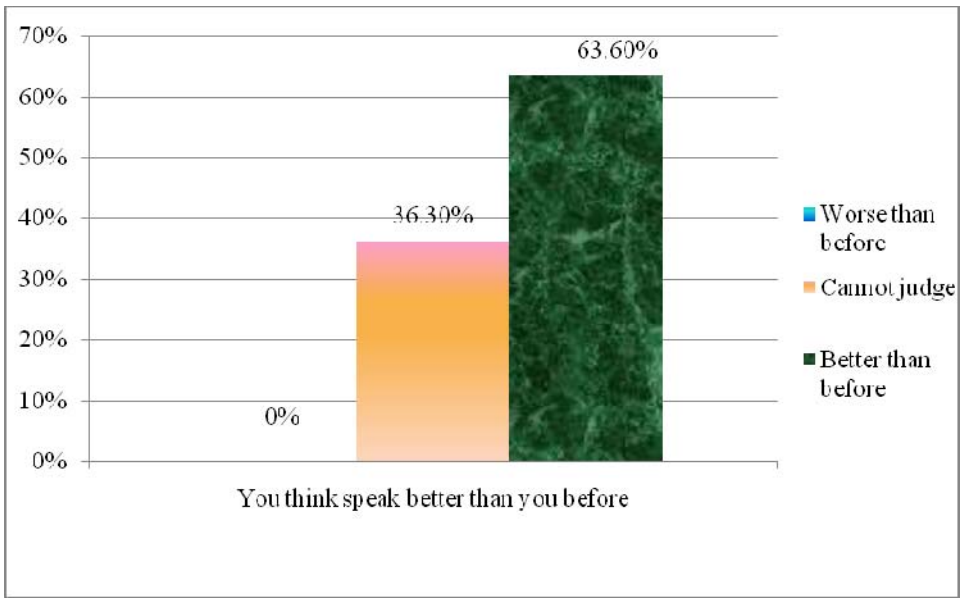
Graph : 12 Perception six month post surgical difficulty and stress



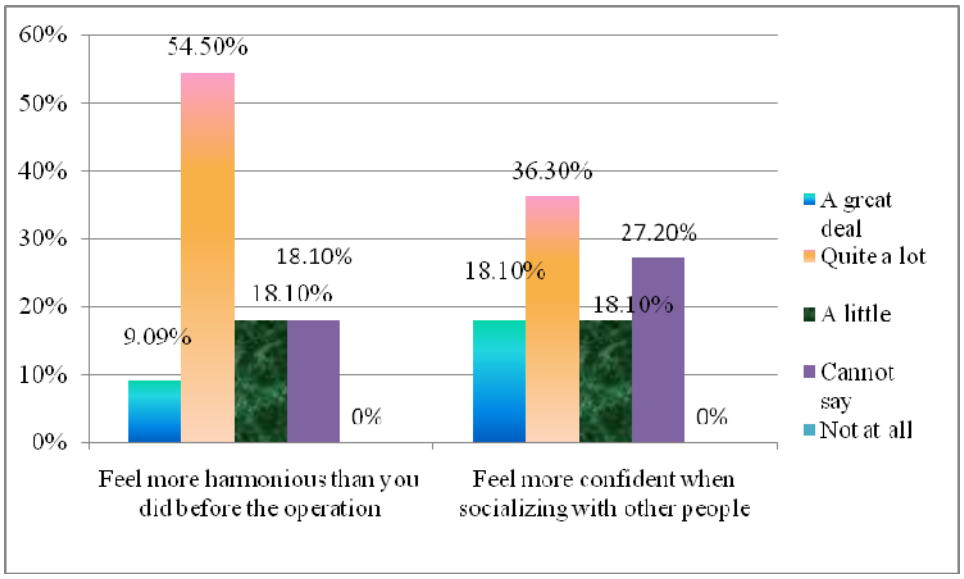
Graph: 13 Perception six month post surgical function



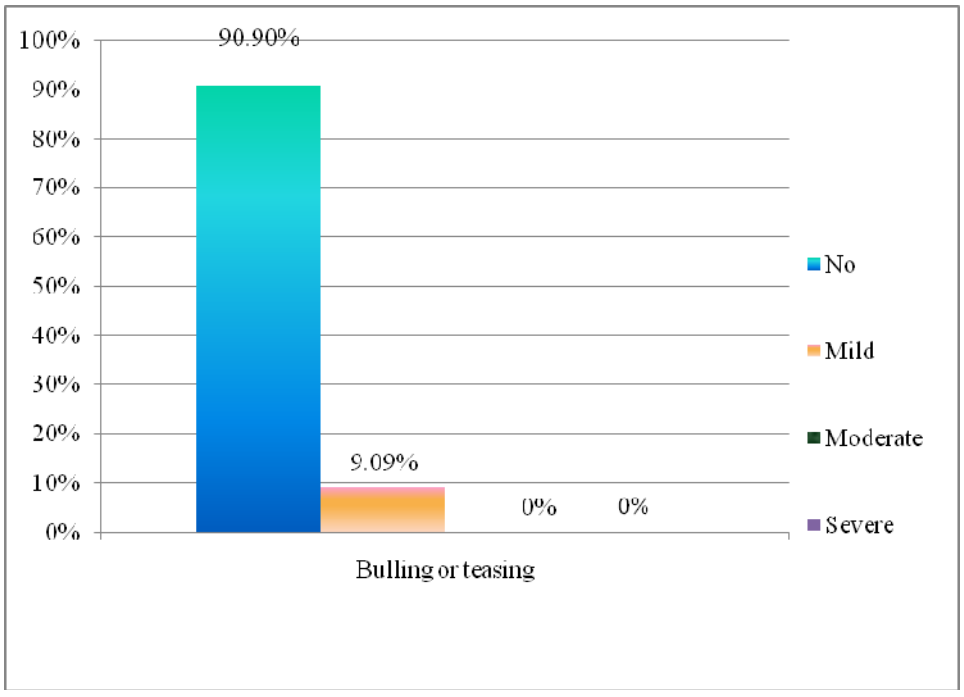
Graph: 14 Perception six month post surgical function



Graph: 15 Perception six month post surgical psychosocial status

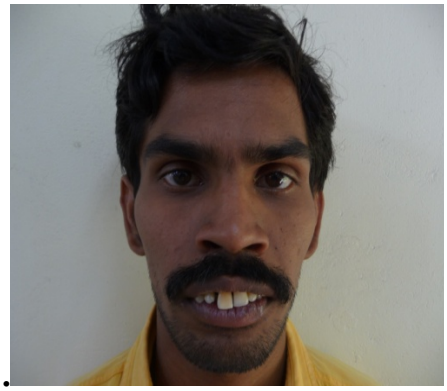


Graph: 16 Perception six month post surgical psychosocial status



Preoperative, Postoperative frontal and Lateral Photographs

Case 1



Pre operative frontal view **Post operative Frontal view**

Pre operative lateral view **Post operative lateral view**

Case 2

Pre operative frontal view

Post operative Frontal view

Pre operative lateral view

Post operative lateral view

Case 3

Pre operative frontal view

Post operative Frontal view

Pre operative lateral view

Post operative lateral vie

Case 4

Pre operative frontal view

Post operative Frontal view

Pre operative lateral view

Post operative lateral view

DISCUSSION

The face is seen as the most important physical characteristic in the development of self-image and self-esteem. The appearance of the face significantly influences the social acceptance and psychological well being of an individual. People who are satisfied with their face appear to be more self-confident and have higher self-esteem than those who are dissatisfied. Therefore, it is not surprising that most people view orthodontic and orthognathic surgical treatment primarily as a way to improve Dentofacial appearance.

There is growing interest in the impact of dental and dentofacial conditions on patient's quality of life (QOL).[3] With the paradigm shift to patient-centred health care services, increasing attention is being paid not only to clinicians assessment of treatment outcome, but also patients own perception of changes to their QOL to inform evidence-based practice. Despite these significant facial and functional changes, few well-controlled studies have examined the psychological antecedents and outcomes of orthognathic surgery.

Patients seeking treatment for dentofacial deformities frequently do so because of functional problems and dissatisfaction with esthetics[7], and it is recognized that dentofacial deformities can have a psychological impact on those affected. Thus, it is acknowledged that dentofacial deformities can have

profound functional, social and psychological effects on QOL, but assessment of their impact in a comprehensive manner is limited and it is unclear which approach should best be employed.[28] In our study we evaluated the patient's experience of orthognathic surgery in three areas: presurgical motivation and function, immediate post surgical and 6 months post surgical esthetic, functional and psychosocial outcomes.

The perception of esthetic morphology differs significantly between dentists and lay persons.[6] It is important that a patient requiring orthognathic surgery have a thorough understanding of the proposed treatment and predicted results. It is also essential for the oral and maxillofacial surgeon to fully appreciate the patient's motivations and expectations, as well as the social pressures encountered, since it has been shown that dissatisfaction with esthetic surgery can be related to the attitude and response of the family, close friends, and even casual contacts.[4]

Satisfaction with dentofacial appearance has also been found to correlate with age. Previous studies have shown that satisfaction with facial body image decreases with age.[3] Girls between 13 and 16 years of age are more concerned about crowding and rotations than younger girls. Consciousness about body image, including dental appearance, seems to increase with age, reaching a peak around the midteens. The perceptions of children and adults might not be comparable, because, for instance, children and adults could have different understandings of the items and the scales of

the questionnaires. In our study we have homogenous group of young adult patients. 81.8% of our patients were within 20-30 years group, 18.2% were within 15-20 years group.

In our study, the primary motivation for orthognathic surgery being lack of esthetics (63.6%) and self confidence (72.7%) in 2/3 rd of our patients and 1/3rd of our patients have reported, functional reason for seeking treatment. This is attributed to young age of the patients. It is in accordance with other studies in the literature[14,15,7]. It was found that older patients express more concern about functional problems and future dental health than younger ones[3.]

Male to female ratio in our study group was 4:7. This is attributed to females being mostly concerned about their facial appearance and esthetics. Cultural influence also play an important role in patient's motivation.[12]. Dentofacial deformity is considered a major obstacle in the marital status of an individual, in our part of society. Women experienced this problem more often than men, which might explain why women, more often than men seek for orthognathic surgery in our study group.

Although both males and females primarily wanted to improve their self-image and oral function, it was found that significantly more males had a strong social well-being motivation. It might be, according to Phillips et al,[9] that males, more than females, expect the desired change in appearance to be

translated into social and interpersonal gains, while females focus on improved appearance as its own reward.[3]

Those patients who rated dental function as an important rationale for surgical treatment were initially more hesitant about the surgery and had more problems with adjustment to postoperative appearance, than those who rated appearance as an important incentive. This reinforces the importance of pre-surgical counselling, especially for patients with functional incentives. Second, patients who had postoperative surprises tended to rate the entire procedure negatively.[14]

We found that, the decision to undergo surgical treatment by the patients taken after a long period of time, 2 years on average, and that half of them were influenced by others, i.e. their family, friends or dentist, before they made their final decision. Most of the patients thus have a multicausal background for treatment. 27.2% mentioned functional problems and 63.6 % mentioned esthetics as reasons for their demand of treatment.

Dentoskeletal deformities and society's reaction to them are a source of psychological stress which precipitates personality disturbances. The sheer reality of having a physical flaw is anxiety-provoking in social interactions, according to Linn and colleagues. Distress created by a poor body image is related to the disparity between one's physical appearance and culturally accepted norms.[13]

It appears that patients who score in the high-neurotic range on Eysenck's scale and have external locus of control are more likely to express dissatisfaction with surgical outcomes in the early stages. They also show less improvement in self-esteem. The surgical team is well advised to provide special preparation and counselling for patients with a tendency toward neuroticism and external locus of control and to assist them during the early postoperative course.[23]

Kiyak et al [22],showed that male patients who scored in the introverted range on the introversion- extroversion scale and females in the high neurotic range reported the most difficulties immediately after surgery.[22] Patients with realistic expectations of pain and paresthesia experienced easier postsurgical adaptation.[2] Preoperative psychological assessment was not done in our study. It is one of the short coming in our study.

It is not surprising that experienced pain and numbness relative to expectations were the best predictors of postsurgical satisfaction and self-esteem in the early postsurgical stage. It is not difficult to understand the displeasure of a patient who makes an unrealistic assessment of the discomfort, he would experience after surgery. It therefore behoves the surgical team to expend considerable effort preparing patients for the pain, numbness, and difficulties with oral functioning that would normally be experienced.[23]

Patients must be able to make an educated decision, weighing the risks against the benefits of better jaw function and facial cosmetics.[14] There is a pattern of declining problems with oral function, pain, and paresthesia over time. Almost hundred percent of our patients experienced only mild paresthesia or pain 6 months post operatively and none had experienced moderate to severe post surgical complications.

The results of this study show that only about half of the lay group could recognize a 4 mm profile change in a prognathic subject and even less (44%) could recognize such a change in a retrognathic subject. At least a 6 mm change had to occur before it could be noted by more than two-thirds of the lay observers. These findings suggest that, although changes less than 6 mm may be needed to correct occlusal disharmonies, the surgeon should be aware that the esthetic change may frequently be underestimated and, consequently, one should be cautious in statements to the patient in this regard. The significant factor, however, is the perspective of the lay groups, since they represent the patient population. Their perception of change adds further emphasis to the already recognized situation that in planning orthognathic surgery, proper consideration must be given to the position of the lips as well as the chin when estimating the final outcome.[4]

It appears significant that the majority of respondents experienced some level and duration of depression. Most respondents reported their depression as occurring after they had left the hospital. For the majority, the

depression lasted less than 1 week. Although many believed it was a reaction to medication, it may well be that the disorientation, which they did not expect, was a contributing factor. Two types of depression affect postsurgical patients more commonly. One, possibly induced by the steroids given to reduce swelling, occurs within a few days postoperatively. A second, more severe type, which occurs in fewer cases, may be caused by a loss of identity and may last for several weeks. Usually these patients adjust to their new image during a period of several months. Other causes of depression suggested may relate to unrealistic expectations of surgery (e.g., saving a troubled relationship)[14]

In the initial postoperative period, when the patient is convalescing and so is more dependent on others for care, support of a general nature from individuals close to the patient is crucial. In the later stages of treatment, the patient is less in need of direct help. However, because the treatment result is still not clear, others reactions to this aspect continue to be important in relation to treatment satisfaction. Despite the patient's continued adaptation to functional and appearance changes well after surgery, the patient's close contacts are likely to think that the patient's emotional healing process is complete, when the physical corrections have stabilized. This misperception can result in a drop in support level, well before the patient feels emotionally "back to normal."[17]

Patients who report extensive pain, postsurgical discomfort, and problems with oral function in the early postsurgical stages are more likely to report depression, tension, anxiety, anger, hostility, and fatigue than those without serious surgical squeale. Those who report continued problems with numbness and swelling 6 months after surgery are also most likely to experience these negative mood states.

Dissatisfaction in the immediate postoperative phase was attributed to esthetics, as the anticipated results were not achieved. The esthetic change was not appreciated socially and personally as well. 3 females (27.2%) and 1 (9.09%) male patients in the study group were not satisfied with the outcome . As the other factors related to dissatisfaction decreased, there was a gradual change in patients perception. only 2 females (18.18%) were dissatisfied with their decision to undergo surgery.

In the current study, the patient population who underwent orthognathic surgery sucummed to certain postoperative difficulties. However these issues resolved with time (6 months). Most of the patients in this study in the immediate postoperative phase had significant amount of stress. The most significant cause of stress being, pain (81.8%). Both male and female patients suffered from pain (3:6). Like any other surgical procedure involving the osseous structures, orthognathic surgery is no exception in causing postoperative swelling. 81.8% of patients in our study had postoperative swelling ,of which male to female ratio was 4:5. Numbness was

reported in 45.4% with a male to female ratio of 2:3. Postoperative nausea and vomiting (PONV) was observed only in one case (9%) Masticatory function significantly decreased in all patients in the immediate postoperative period. However the function improved in most of the patients with time . Only 36.3% patients reported with masticatory problems; six months postoperatively with male to female ratio being 1:3. Complaints regarding gastric upsets , headache and snoring was reported in 9.09% of patients. All patients were completely relieved of their symptoms as time lapsed.

Limitation of this study was due to recall bias. Therefore to reduce the risk of recall bias, criteria of patients post surgical period in this study was limited. Because of the small sample size, it is difficult to investigate the effect of other variables such as education and economic status.

CONCLUSION

1. Success of the orthognathic treatment, depends not only on clinical outcome but also depends on patients perception and satisfaction of the whole treatment.

2. It is important to implement more effective pre-treatment preparation programs for orthognathic surgery patients. Those facing orthognathic surgery need to know what is going to take place, how it will change their appearance, what risks they are taking, and what problems they might encounter.

3. **The more information a patient is given, the less likely that person will feel negatively toward the surgery or the surgeon, especially if the changes are unexpected.**

4. An information package for the orthognathic patient and his or her family members will aid in better presurgical preparation of the patient.

5. **Expectations must be realistic; patients must anticipate the depression and pain which may accompany surgery**.

6. Preoperative and post operative psychological needs of patients must be acknowledged and proper counselling should be done.

7. Most of the patients underwent orthognathic surgery in the study were satisfied with the overall treatment and treatment outcomes.

8. The high rate of satisfaction was due to the surgical goals of patients being fulfilled and treatment results were beneficial to them.

9. Facial esthetic was perceived as the largest improvement and was satisfactory to most of the patients. This was followed by self confidence, social interaction, function and speech. Although a negligible percentage of patients dissatisfied , mainly concerned with the preparation and details of information, post surgical problems, post surgical care and facial appearance change after surgery.

Nevertheless these results do suggest that some patients who seek orthognathic surgery should receive extensive preparation so that they may become more familiar with both its benefits and its risks. At the same time, however, patients should expect several months to elapse before they make conclusions about postsurgical outcomes.

Vigilant preoperative evaluation , meticulous treatment planning and good surgical technique can result in satisfactory and favourable outcomes.

Although most of the patients in our study had a satisfactory outcome, further studies are needed with a larger sample size to confirm these findings.

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